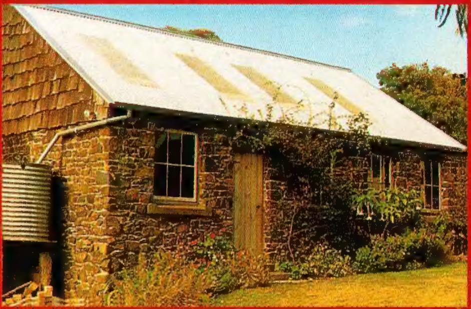
50th ISSUE!

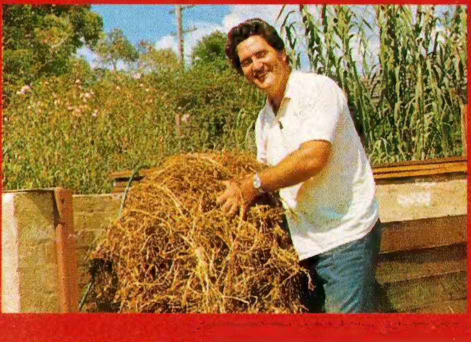
No 50 — May, 1986/$2.75*

EARTH GARDEN

1986 Australian Access Directory — Part 1

LAND ETHICS

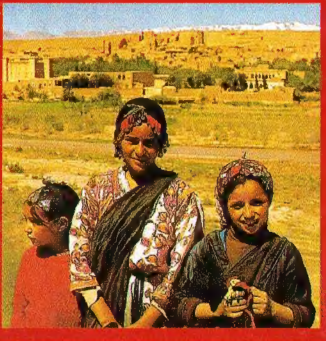


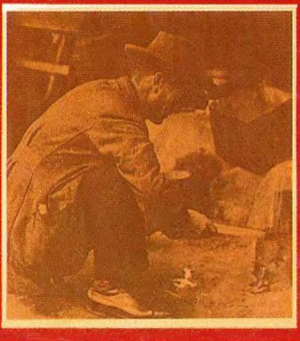


SUSTAINABLE AGRICULTURE

Farming as if the earth matters

- **Overview and directory of Biodynamic, Keyline, Organic and Permaculture groups and methods. Happy gardening, the Terrific Tuber — history, nutrition and small and large scale potato growing — Small Farm Field Days.**
- **Build stone and mudbrick arches, a bamboo ladder, poultry pyramids. Soil tests for earth building, 80 Self-Built houses!**
- ***Plus:* Robyn Williams' peace message, Energy Pulse, healthy sweets, Stockmen's chic, letters, land lines, unclassifieds marketplace.**





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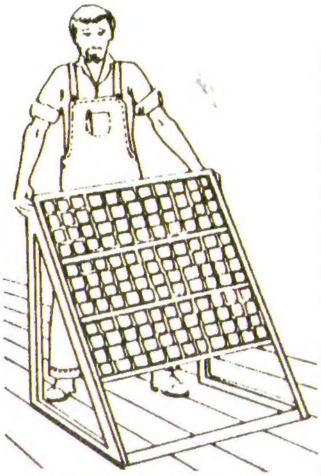
EARTH GARDEN BOOKS



ENERGY WORKS!

Home Energy Systems

By Keith Smith

Nelson, Melbourne, 1985, large format paperback, 211 pages, illustrated. ☐ $19.95 posted.

Why spend the rest ot your life paying someone else for your electricity? Here's how to plug in the renewable energy of the sun, wind or water using an efficient 12V or 240V solar electric system, wind generator or water turbine. Run lights, radio, TV, computers, tools and appliances wherever you live.

"The major part of this book is devoted to practical issues, hardware and actual installations.

". . . This book should appeal to anyone wth an interest in the supply of energy to weekenders, farms or other remote dwellings or even to the suburban household." — Dr C. J. L. Cornish of Murdoch University, WA, in *APACE WA Newletter.*

The Illustrated EARTH GARDEN HERBAL

Compiled by Keith Smith

Nelson, 1978, large format paperback, 157 pages, 120 woodcuts. ☐ Special $5.50 posted.

This is a quality book, printed on fine white paper, which makes an ideal gift for anyone who loves herbs and gardens or the classic 16th century herbals about them.

It covers the fact, fantasy and folklore of 40 herbs, with medicinal uses and growing tips for Australia. The famous herbalists such as Dioscorides (60 AD), Pliny the Elder (77 AD), John Gerard (1597), Nicholas Culpeper (1653) and John Evelyn (1699) speak with delight (in their own words) of these beautiful, aromatic and useful plants.

"A fragrant impression of the old herbals and the men who wrote them." — *Daily Telegraph,* London.

HARD TIMES HANDBOOK

Survive — and thrive!

Keith & Irene Smith

Nelson, 1986, 204 pages, 70 illustrations. ☐ $8.50 posted.

This is the second, corrected edition of our practical book of skills, strategies and short-cuts for urban survival. HARD TIMES HANDBOOK outlines a new, self-reliant approach to city living. It tells you how to do more with less, be prepared for food shortages and emergencies, save energy, make money without a job and manage your food supply. Make bread, yoghurt, soft cheese, candles and soap. There are 150 recipes for cheap, healthy tucker and 180 money-saving household hints.

The Settler's Guide

Old time skills and bush lore

Compiled by Keith Smith

Nelson, 1983 (second printing), large format paperback, 176 pages, illustrated. ☐ $15.95 posted.

Pioneer a bush block from 'go' to 'whoa'. How to clear, fence, square a gatepost, whitewash, build a slab hut, a rammed earth house or a timber windpump with hand tools. Harness horses and select, sharpen and care for bush and bench tools like axes, adzes, planes, crosscut saws, mauls and scythes. Tried and true advice from *The Agricultural Gazette* of NSW, 1890-1910.

Earth Garden, started in 1972, is the original Australian journal of self-reliance. It is intended as a friendly forum of practical ideas, shared knowledge, sources and alternatives.
It's about putting a roof over your head, growing your own food, using alternative energy and surviving — and thriving — in the city or the bush and the inner changes which follow when you are in tune with nature.

Published and edited by Keith and Irene Smith.

Illustrations by Elaine Norling.

We welcome advertisements appropriate to the aims and ideals of Earth Garden, but reserve the right to refuse ads at our discretion. Send SAE for display rates.

Address: PO Box 378, Epping,
NSW, 2121.

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EARTH GARDEN 50

The cover

Front, top left: Land degredation. Each summer wind erosion in the Mallee, north-west Victoria, swept away sandy soil, exposing bare Mallee gum roots. *Top right:* The conservation tillage technique of crop stubble mulching reduces soil erosion and improves soil fertility and structure. Photo: Soil Conservation Service of NSW. *Left, centre:* Steve Lee's completed bluestone barn at Queenscliff, Victoria. *Left, below:* Carl Hoipo of the HDRA organic gardening group preparing compost.
Illustration strips (front and back cover) show some cover highlights from our first 50 issues.

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1986 AUSTRALIAN ACCESS DIRECTORY

A guide to books, plans, groups, tools and techniques, and a bibliography for living a self-reliant life in Australia. Part 1.

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FIFTY NOT OUT

"EARTH GARDEN presents a range of natural lifestyles. It is intended as a key to sources, practical ideas and alternatives to the nine-to-five drag.

"EARTH GARDEN is concerned with the back-to-the-earth movement, surviving in the city, living in the country, organic gardening, community, outdoors, food and diet, living more with less, and the inner changes that follow when you are in tune with Nature.

Let us lead you up EARTH GARDEN's path to the good life."

Those were the first words in our first issue, Earth Garden No 1, which came out in March 1972 — 14 years and 50 issues ago!

We were just married then and buzzing with the idea that we should produce a magazine to help back-to-the-earthers. We knew it was needed, so we jumped right in and did it, learning how as we pasted up the pages on our friend's kitchen table in Melbourne. Looking back, nothing has changed in our basic philosophy, though we've never been content to stick to a safe and established formula for Earth Garden. We've alway been pushing ahead, changing content and layout, responding to readers' opinions and input and expanding that original outlook. We've found it creative and inspiring.

We're surprised, pleased and proud to have reached 50, which we think is quite an achievement for a two-person magazine. In the beginning, we didn't look past the first issue. It was to be a 'one off' to see how it would go. It did — and it certainly changed our lives, which since then have revolved around this little magazine and you, its readers, for most of our waking hours each day.

Through those years we've tried to be a catalyst spreading practical know-how, ideas and resources to enable anyone to lead a more self-reliant life. The feelings we've received from you have been overwhelmingly positive. We are constantly being reminded that we are on the right track when people tell us that our land lines helped them to find their piece of Australia or to join a community or that an EG article gave them the impetus to set up a solar electric energy system, start a vegie garden or build a mudbrick home. We still get a kick out of reading your friendly letters or looking at a file card and seeing someone who has moved from the city to the country or stuck by us all those years and subscribed to every issue. We're happy that we pioneered the way for the specialist magazines which have followed in the fields of natural health, soft technology, building and New Age ideas.

It always amuses us to look down the list and see the staggering number of staff needed to produce most big commercial magazines (TIME for instance). We work as a 'committee of two'. All the worry and planning of each issue as well as its editing, production, distribution and management rests on us. Keith's main tasks revolve around the writing side of the magazine, choosing themes and chasing articles, writing some stories, editing readers' contributions, typing copy for the typesetters and checking and correcting the proofs. Irene picks up the typeset copy from the printer and does all the layout and paste-up, including the headings, under Keith's watchful eye. So, Earth Garden is produced.

While this is going on, there's each day's mail to take care of, with your orders and subscriptions, bookshop invoices, nice letters, letters for publication, land lines and unclassifieds and our own letters and reminders to send out. This is usually something we share and enjoy. We still keep the subscription cards in eight shoeboxes in the lounge room. Then there's the accounts, banking and invoicing (Irene) — and very rarely these days — going out into the country to get stories and take photos 'on the spot'. Over the years we've also edited a bunch of books in our 'spare time' (see page 58).

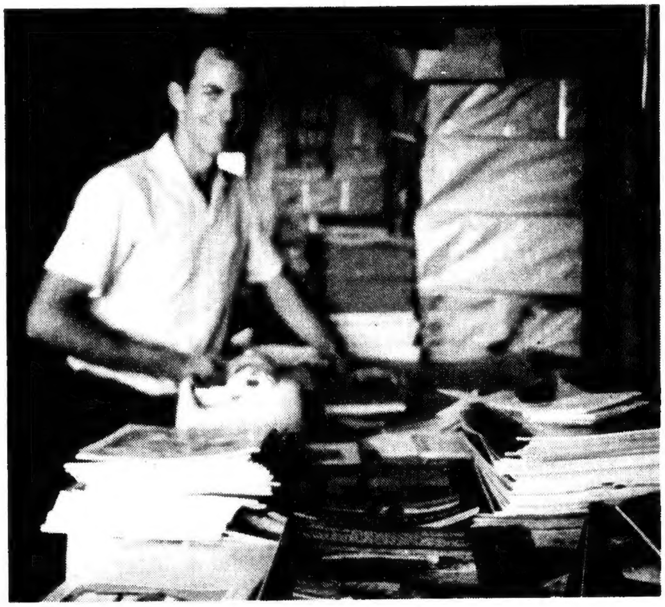
We have two indispensable helpers. Elaine Norling has been doing her distinctive illustrations for us since out Womancraft issue (EG21) in January 1978. Earth Garden wouldn't look the same without them. Greg Anderson was still at school when he joined us in June 1978 to make parcels and send out EG issues from our packed backyard garage. Now he's an Arts graduate with honours in psychology and music and is leaving us to study Aboriginal music in the outback as part of his postgraduate studies. Thanks and good luck, Greg.

Earth Garden wouldn't exist without the continuing support and encouragement from you, our readers. We hope this happy state continues. For us, Earth Garden was and is an antidote for all the many ills of our society. We hope it is for you, too.

That walk along the Earth Garden path turned out to be full of twists and turns. It's been slippery at times and mostly uphill, but we've planted those 50 landmarks along the way. The view looks fine from here. Thanks for coming along with us.

Peace and love,

Keith & Irene



Greg at work in the shed.

Dear Keith & Irene,

I couldn't do without **Earth Garden.** It's a great reference book. Was given a couple of pigeon pea seeds. Nobody seemed to know anything about planting, etc. Then I remembered the article in **Earth Garden 47** which answered all our questions and more.

We rather like some of the ads and as you say, it keeps costs down.

Long may you be sustained, Roma Blackwell, Dora Creek, NSW.

Dear Keith & Irene,

Maybelle Jocumsen, who suggests bone meal as an ant deterrent in **HARD TIMES HANDBOOK** (page 218) should perhaps have had her ants identified. The method was a complete failure as a deterrent at our beach home at Broulee, NSW. We have more and more fat, vigorous, contented colonies than ever! They just loved the bone meal!

Regards, Murray Tompson, Potts Point, NSW.

Hello,

We are two German girls, both aged 20, who want to visit Australia for a year, so we are looking for jobs on an alternative farm or project. We got your address from a German friend living in Australia. We will probably arrive in Australia in September this year. We hope you can help us.

Best wishes from Cornelia Grunig, Buchwaldstieg 19, 2000 Hamburg 73, West Germany and Kerstin Stender, Kupferdamm 8, 2000 Hamburg 72, West Germany.

earth people write

Dear Readers,

I hope some of the good people out there will be able to help us with our questions.

Firstly, about the hand garden mulchers. Are they OK? Has anyone out there got one who can give us the lowdown? I would like a mulcher, but I am concerned that a hand one would be too hard to turn or not up to the workload.

Secondly, I know there are some people out there with compost toilets (not the ones with fans and heaters). We have read about them and would like one but we are still unsure whether it would be suitable for our house.

And thirdly, vegie tops. I would love to know which vegie tops are edible. I was all for trying and seeing until told that potato and rhubarb leaves are toxic. What about the rest: Carrots, beetroot, parsnips, broccoli, caulifower, etc? It seems so much waste. What about garlic tops and beans or pea leaves? We only go to town once a week and the greens we buy are not so interesting by the end of the week! We are just selling up and the vegie garden is limited and I would like to maximise its use.

Any help would be appreciated. I'll answer, but will not promise to be prompt. We are building (enough said).

All the best, Carolyn Burgess, C/- PO Armidale, NSW, 2350.

Dear Carolyn — A brief reply on vegie tops. All those you mention are safe to eat except the rhubarb and potato shoots. Pea and bean sprouts are very tasty and nutritious (see All about sprouts in EG31) — Irene & Keith.

Dear Keith & Irene,

Years ago I was a workmate of a Danish engineer and at 'Smoko' time his wife used to bring over to the Engine Room a big enamel billy of a delicious coffee-like drink. I forget the exact mixture used to make this brew, but from memory my mate's wife used to use roasted and ground rolled oats and mix the powder with some other ingredients, to make the basic coffee-like grounds. This was then mixed with hot milk.

Could anyone supply a recipe based on this kind of substitute coffee powder? My wife and I are coffee drinkers and I would like to try this Old World recipe.

Yours sincerely, Gordon H. Bartlett, PO Box 216, Caboolture, Qld, 4510.

Dear Keith & Irene,

Thanks for the timely article **Building blues** in EG49. My wife and I have been close to the edge a few times in the last few years, living in a 23 ft caravan with three children aged 3 to 13 while building our 'conventional but different' home. It's nice to know you're not alone and to be forewarned that it is not over yet (we moved into the yet unfinished house six months back). The chance to start my own business came up before Christmas, so we took it at the risk of a slower completion of the house, according to the article it may be for the better!

We have purchased a second-hand 110 volt 2,000W wind generator (yet to be installed), but in the meantime we are running on the batteries charged by a 5 kVA petrol generator.

If houses had spirits, then I think one lives on in ours. I was looking for second-hand bricks to build pier walls under the suspended concrete floors of the house when I scored 32 truck loads of rubble from an old mansion burnt out in the Ash Wednesday fires at Anglesea. We hand-cleaned 20,000 bricks and built the entire house out of them. We have a high tank for water pressure to be filled by a windmill, a 110V lighting system, wooden panelling in the passageway, chooks and a vegie garden. We were well into the building and plans when we discovered that the old mansion had been written up in the 1937 edition of **Home Beautiful.** We obtained a copy and the hair on the back of the neck fairly rose when we read that the original house had a high tank filled by a windmill, wood panelling, 110V lighting system, chooks and a vegie garden. At the time we had been considering an underground water storage system; the old mansion had one also.

Have you written anything on refrigeration? The batteries handle the 15 cubic ft refrigerator alright, provided we run the generator for a couple of hours night and morning, but I am not too happy with a separate freezer pulling the extra power. Commercially obtainable refrigerators are too expensive for the size. Ideally, I suppose, I'm looking for a 'do-it-yourself' gas refrigerator building manual.

Keep up the good work, David & Suzanne Lee, Torquay, Victoria.

Dear Earth Garden,

Wanted: How to make, or modify a 12V, 7 cubic ft refrigerator for use when camping out.

W. T. Hall, Nildottie, South Australia.

Dear friends — We are planning articles on refrigerators for future issues. We'd love to hear from EG readers who could help put together this information — Keith & Irene.

Dear Keith & Irene,

I must congratulate you on your 50th edition. May it be a good one.

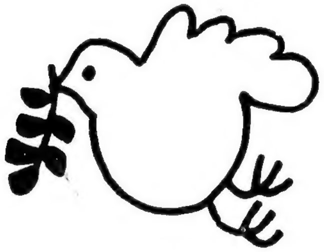
I would like to read some more about planting vegies at the same time as keeping a balance in the diet, as I am trying to be self-sufficient in the vegie department and I find I'm either up to my ears in one or two vegies or have none ready.

Is there anyone in my area who might wish to correspond with me, or any books you know about covering both planting and nutrients for the **basic** home grower. I wish to grow at least four types of vegies all through the year if possible and have them balanced if that is possible. I enjoyed **The zucchini glut** (Earth Garden 31). I've got them coming out my ears!

Wishing you love and peace and prosperity, Hazel Munslow, 9 Elder Street, Goolwa, SA, 5214.

Dear Hazel — A good idea. You'll see we've made a start with our separate articles on the nutrition and growing of potatoes in this issue — Keith & Irene.

Give peace a chance!



We marched with 125,000 other people committed to peace in this year's Nuclear Disarmament March and Rally in Sydney on Palm Sunday. Why? Because we want the world to be safe and happy for the generations which follow us. In the Domain we listened to this compelling speech by Robyn Williams, director and producer of The Science Show on ABC Radio. We thank him for allowing us to reprint his words in Earth Garden as part of our contribution to the International Year of Peace.

Palm Sunday, 1986

By Robyn Williams

Let me start by paying tribute to two great men, two men who campaigned for peace throughout their lives. One is dead, one is very ill.

The first is Olof Palme, Prime Minister of Sweden until so very recently. Sweden, that most civilised of countries, where I was at the end of last year. I didn't meet Olof Palme, but I did meet his successor, Ingvar Carlsson, who saw me, on his own. No *minder* was thought necessary as in other countries; and when we'd finished talking, Mr. Carlsson showed me to the lift with all the informality and courtesy that typifies the Swedes. Olof Palme did the same kind of thing. He used to enjoy the shock expressed by foreigners when they saw him walking alone and unprotected in the street.

That's how he died. But Sweden has let the world know that, despite its tragedy, it *will not change.* You can't stand for peace whilst waving a gun. Olof Palme, who stood for peace all his life, has left an extraordinary legacy, one which a villain's bullet cannot destroy: Sweden will not let it do so. We applaud their vision ... while we acknowledge their tragedy.

The other man is one of my closest friends, someone whose talent and kindness has always astounded me. His belief in human goodness, when it's given half a chance, is without limit. I speak of Prof. Peter Mason. Peter understands as well as anyone in this country the true meaning of the slogan for today's rally: *Everyone Counts for a Nuclear Free Australia.* Everyone, even the smallest, the weakest and the poorest. Peter has never doubted how much the people, the ordinary people, can and do influence events. Peter, we send our best wishes and I would like today to nominate Prof. Peter Mason for a Peace Prize given for the International Year of Peace. Peter is with us here today, still marching.

Which is more than I can say for President Ronald Reagan. Do you remember, not long ago, before the last presidential election, that extraordinary scene shown on television, when Ronald Reagan, wearing cowboy clothes, met the press? 'What' asked the journalists, 'What are you doing about the arms race, Mr. President?' A very difficult and embarrassing question, one for which he had no *script* to provide an answer. So, the President of the United States, before our very eyes, on TV round the world, shuffled about, looked down at his shoes and said ... *nothing* at all. Then, Nancy Reagan, who very often shows signs of being much smarter than her husband, Nancy Reagan, also staring at the floor, whispered to him: 'Say we're doing all we can.' And Reagan looked up, switched on that famous *daft* smile and said it: 'We're doing all we can.'

That, in an election year, from an incumbent president. *Now* the president in this year's budget has the affrontery to demand an increase in defense spending that is *so gigantic* it would be more than the *entire income of the poor half of the world's population* , ALL combined. Just the defence budget. He says he must have a trump card, and that's it: weapons, worth as much as the poor half of the planet's population has for *everything.*

But Mr. Reagan's trump cards are not the reason for any dramatic improvement in the prospects for peace. Nor the Pershings or the MXs or the Cruises or the other vile threats he wants to wave. The *reason* he went to Geneva, the *reason* they *had* to do something after years of neglect, is because of *us.* You and me, the thousands, the hundreds of thousands of people of Europe, the millions of decent Americans who marched in the biggest demonstrations in human history, the youngsters of Germany, the kids in Holland, the women of Greenham Common — still there after all these years — yes the women are still *there* and *no-one* will get rid of them until the last missile has been removed. *We* did it, Mr. Reagan. And you know what you can do with your trump cards. The same as Congress did with your *Contras* money.

But why single out the American President? There are *several* competitors in the arms race. The Soviet Union's record is far from perfect. Well, because he's supposed to represent *our* side, including Australia. Karen Milhauser [of the U.S. Citizens Against Nuclear War] has pointed out how creditably *we* have performed diplomatically, and our achievements should be noted and applauded. But *one* country stands out in this region for its brave stand for peace: New Zealand. Let's see Australia become just as famous a byword to rank with the likes of Sweden and the Kiwis. It might even help us with our cricket.

One factor that's certainly to Australia's credit is our refusal, *so far,* to have anything to do with Star Wars. This brainchild of Mr. Reagan and Edward Teller is probably the most *stupid* and most *dangerous* idea *ever* to have been foisted on the human race. It is stupid because it won't work. I have that from countless people, scientists who should know, from Isaac Asimov and Sir Mark Oliphant to Dr. Frank Barnaby, once director of the Stockholm International Peace Research Institute. It is dangerous because it will, if allowed to survive, destabilise the world's economies and research efforts more than anything ever has. Trillions of dollars ... billions won't be enough.

Star Wars must not happen. It is discredited, dishonest and disgusting. We must not let it happen. Yes, *we.* There is a book, just published in Australia, that tells you some of the things *you* can do, if you want suggestions. It's called

Robyn Williams (ABC Photo).

How to Stop the Bomb, An Action Handbook for Australia. The authors are Gavin Scott, Geoff Hollond and Pat a Becket. They give the arguments, the tips and the information needed if you want to do more than march once a year. *How to Stop the Bomb* is published by Hale & Iremonger and it's terrific.

It's terrific, above all because it leaves no doubt about the importance of *everyone* in this campaign for peace. I know some politicians will say we're simplistic, that we don't understand the complexities, that we must leave it to them. They tried to say the same to the nuns of Manila as they defied and defeated the tanks of Ferdinand Marcos. *Then* look what happened. Marcos, quite recently congratulated officially by the American government for services to democracy; Marcos, congratulated by the Soviet Union on winning the election — Marcos brought down by People Power. *It happens.*

And it can happen for this, the most important challenge ever faced by ordinary people: the elimination of nuclear weapons from the face of the earth forever. Just imagine what it would be like. Just imagine. I know it's hard after a generation of terror, knowing the dreadful risks we face. I know it's hard for the kids who've not known what it's like, as a generation, to be sure you'll reach adulthood. As many as 75% in Adelaide, and certainly more than half of young people elsewhere in Australia, genuinely do not expect to live a full lifetime, expect instead, to disappear in the blast of World War Three. This is *utterly shameful.* No generation should have to bear that sort of gloom. We have seen *The Day After,* seen *Threads* and *The War Game.* We realise how close the hands of the Clock are to Midnight and we have suffered accordingly.

Now, dare I say, we may be seeing the turning point. *Now,* I *will* dare to say, the Change is within reach. It will require as much effort from *everyone* as before, as much determination, as much sacrifice, but this time, with the sure *hope of progress.*

I have a dream ... if I may borrow the words of that great Black American whose name was celebrated as a national holiday for the first time this year (against the President's wishes). Martin Luther King had a dream, and mine is just as achievable. It is to see a world in which world war becomes as remote as most of the blights of civilisation have become in many of our nations. Since Martin Luther King began his civil rights campaign, America has been transformed in her treatment of non-whites. *Not enough,* mind you, but much more than seemed achievable back in the 50s. If you go back further than that, over a hundred years, you find countries like Britain engaged in the slave trade, the exploitation of child labour, in the use of opium as a weapon of war to subjugate 15 million Chinese whom they turned into 'junkies'. Then, Britain was officially the biggest drugs-runner, on a scale even the Mafia can't match.

Gradually, these evils have been removed. Gradually, we realise that there is hope of progress, that such blight, though it seems immovable, can be cured. I have a dream that the threat of nuclear war will one day seem as distant as slavery is to most of us. That the waste of stupendous amounts of money and resources can at last be slowed, then stopped and that the destabilisation of *all* the world's economies, including America's, will be no more. Imagine what that will feel like, to be able to *do* something real about the scourge of poverty, to feel, at last, that we're *not* on the brink of war. Go on, Mr. Reagan: *Make my day.* Take off your Rambo outfit and try to bring some credit to your great office of President of the United States. Not for years has there been such promise, and we will not allow *any* of our leaders to squander the hopes we have now.

Live Aid for Africa was but one sign that the spirit of our young people is equal to that of any generation. They were delighted to be part of a movement, initiated by Bob Geldorf, that raised $110 million through one huge concert to *Feed the World.* They were disgusted to learn that the Common Market had dumped and destroyed food to the value of five times as much: $550 million only a couple of weeks before. Slowly, the kids are becoming more political, more confident. *I have a dream* that they will insist on disarmament and will give those who oppose it the very same treatment that Ferdinand Marcos received in Manila. Is that what they mean by the word 'neutralisation'.

I have a dream that we are emerging from 20 years of grim depression, when the cynics and the corrupt ruled the land, and that now we shall be able to put the confusion and despair behind us. But such changes come not from dreaming, but from action, as Martin Luther King showed, as Nelson and Winnie Mandela are still showing. Now is the time for nations such as ours, the smaller ones who can show their independence, to take their place in history. Sweden has *half* the population of Australia, New Zealand less than a quarter. Mr. Hawke, what are you waiting for? Gough Whitlam went to China, even Malcolm Fraser spoke against apartheid. What will they say about you in the history books, Mr. Hawke? Will it be more than the J-curve? Will it be more than just taxes and foreign banks?

Will they perhaps say that you helped lead us to a place among the Pacific and Asian people of the world, that huge emerging half of the globe, that declared itself *forever free* of nuclear involvement? Will they say that you were prepared to show some idealism, some determination to face the most important problem there is? *I have a dream* that Australia will soon be known throughout the world for more than Fosters, Rupert Murdoch and the America's Cup; for more than Paul Hogan, koala bears and deadly crocodiles: I have a dream that we may at last get rid of our mean-minded rapacious bully boys, the ones who make millions and stand for little else, and instead of them produce a reputation for those other Australian attributes, *fairness,* optimism and a sense of equality.

Now is the time. Let's do it.

OUR BAMBOO LADDER

By Dieter von Fahland

Drawn by Renate

The pawpaws were growing nicely and were loaded with fruit, but after about two years we could not reach them any more using a stool.

The shiny light aluminium ladder in the local store was far too expensive.

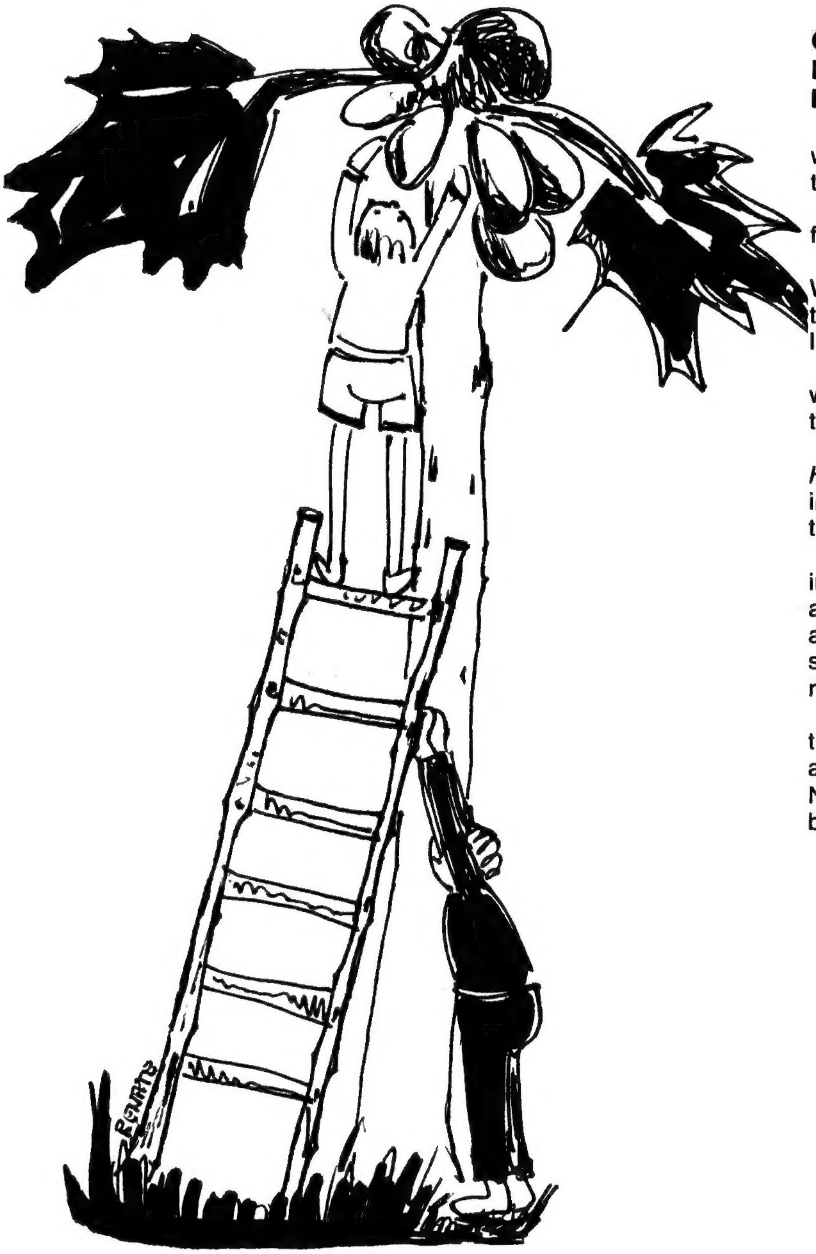
We located some bamboo growing alongside the road. We used only growth which was over a year old, about arm thickness, for the two sides and broomstick thickness (or a little more) for the rungs or steps of the ladder.

Mark the side uprights on the inside where the rungs will go, spacing them as evenly as possible, but avoiding the knots.

Drill holes for the rungs on the inside only with a *Holesaw* fitted to an electric drill. Use different Holesaw inserts for different rungs and try to make a neat fit. Lift out the Holesaw often and clean it with a wire brush.

We secured everything on the ladder with three inserted ¼ inch mild steel rods going through the sides and rungs on each end and in the centre. After that we tied as many weld washers as possible to the rod ends to secure them. You could probably also bend some length of rod over instead.

Our ladder is about 17 ft long, not too heavy, now three years old and still in good condition, though it has always been outside in the open and never under a roof. Not bad for an afternoon's work and a few sticks of bamboo!



BUNYA NUT MOUNTAIN

Rich dessert for four people

Recipe & illustration by Renate von Fahland

½ kg (1 lb) unshelled bunya nuts.

Boil the nuts in water for 20 minutes, or half-an-hour for very large nuts. Peel off the outside shell carefully (this is a bit hard to do, you need a sharp knife). The nut inside should be soft enough to force through a metal strainer sieve using a wooden cooking spoon. It they are still too hard, boil the nuts again.

When cool, make alternating layers of mashed bunya nuts and whipped cream (300 ml or more), grated chocolate (about 100 gm) or Carob if you prefer. Lace each layer with sugar or *Sweetadin* (fruit sugar) to your taste.

Top the Bunya Nut 'Mountain' with whipped cream sprinkled with chocolate flakes. On special occasions, you could put some brandied cherries on the 'peak'!

This is adapted from the recipe for Chestnut Mountain, one of our cherished childhood memories.

Guten Appetit!

HEALTHY SWEETS

By Marja Fitzgerald

Healthy food can be just as delicious (I think more so) than 'normal' food. It's just a matter of learning to handle the slightly different characteristics of the healthy ingredients.

The only sugar I'll use is black sugar, the least refined sugar available (obtainable from health food store). 'Raw' sugars, so called is not very raw at all. With black sugar I've made whatever takes my fancy, including a very palatable marzipan last Christmas. Black sugar has the added advantage of contributing a rich flavour as well as sweetness.

Most recipes contain too much sugar. I always use less than given, between ⅓ and ⅔ of the amount stated in the recipe. If uncertain, use ½ the first time. Perhaps these lesser amounts are still satisfying because of the richness of the black sugar. Some recipes contain sugar but are better with the sugar left out completely, e.g. White Christmas. My modified version derives its sweetness from the dried fruits and from the lactose in the powdered milk and is sweet enough to satisfy sweet-tooths of all ages (even me!).

When using flour, stoneground wholemeal is much tastier than white, as long as it is reasonably fresh. It stays fresher if kept in the refrigerator. Also it is much healthier, as it contains fibre (fibre, for better digestion, is also less fattening) and more B vitamins.

Here are some of my own recipes for healthy sweets.

CHOCOLATE CRUNCH

125 gm (¼ lb) butter
1 rounded teaspoon cocoa
180 gm (6 oz) crushed Wheatbix
1 beaten egg
1 teaspoon vanilla
Piece of fresh ginger crushed in a garlic crusher to release the juice, or 2 teaspoons ginger powder.

Melt together the butter, black sugar and cocoa, stirring occasionally. Place the crushed Wheatbix, egg, vanilla and ginger in a bowl, add melted ingredients and mix well. Place in a greased tray (approx 25 cm x 15 cm) and refrigerate.

HI-FIBRE PANCAKES

¾ cup plain wholemeal flour
½ cup bran
½ cup shredded coconut
⅓ cup sultanas
2 eggs
1½ cups milk
3 tablespoons honey
1 teaspoon vanilla essence
2 teaspoons fresh chopped mint (if available)

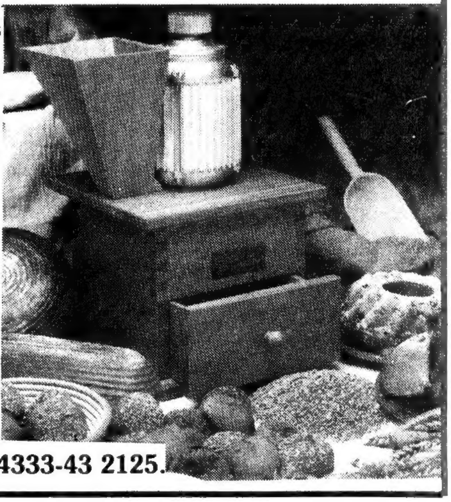
Mix dry ingredients first, then add lightly beaten eggs, milk and honey. Mix thoroughly, leave to stand about one hour. Fry in olive oil till brown, turn over, brown again. Keep cooked pancakes warm in the oven till all are finished.

These pancakes are delicious hot or cold and we often eat them as they are, though treacle and lemon juice with a dob of whipped cream makes a delicious addition. No butter is needed.

HEALTH MODIFIED WHITE CHRISTMAS

1 cup puffed wheat
1 cup mixed sultanas & currants
1 tablespoon citrus peel
1 cup shredded coconut
½ cup powdered milk
¼ cup sunflower seeds
12 gm (4 oz) melted Copha

Mix dry ingredients, add melted Copha, mix well. Pour into tray approx 25 cm x 15 cm (10 in x 6 in), press flat and refrigerate.



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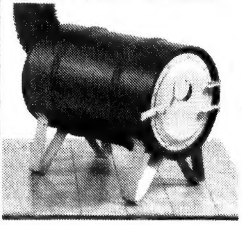
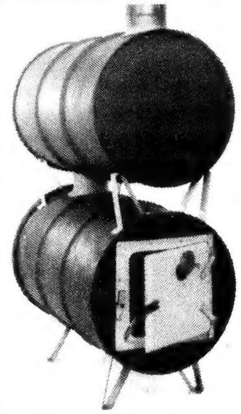


From Mini to Maxi !
Introducing
DOUBLE DRUM



Assembly is easy.
No welding required.

"Was that really a 44 gal. drum?"

This is a comment we hear often when the Republic HOT DRUM is displayed. The door and legs are designed to catch the eye, and the lines of the drum blend into that image. The 'feel' of cast iron combined with the strength and durability of steel. With the drum cut down to 2/3, the proportions really come together. You can see from the the photo that the result is excellent.

In response to popular demand we can now supply a kit to convert a 13 gal drum to a **Mini HOT DRUM**. The **Mini** can take wood twice as long as the average 'pot belly', and easily carry a fire overnight. **Mini** owners soon develope a strong affection for this mighty little heater that lights so easily and burns so steadily.

The **Double Drum** generates 'heaps of heat', up to **243,000 BTU/Hr.** High efficiency - 60% more heat output for the same wood burned. Ideal for big sheds, central heating, greenhouses, etc.

All of these kits have air-tight doors and good draft control. They burn steadily for long periods, and easily carry a fire all night. **Wake up to that 'warm feeling'.**

"But how long will the drum last?"

I'll bet that was the next question on your mind. All of these kits are designed so that **the drum cannot over-heat and burn the steel away.** The first one I built in Australia is 7 years old, and is as good as new. Many in Canada are 10-20 years old and still in use. The 'space-age' high temperature paints available now give very good protection.

Republic HOT DRUM Kit only	**$69**
Mini HOT DRUM Kit only	**$56**
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Check the **HOT DRUM NEWS** for postal costs to your door, or ring **now** with your BankCard, MasterCard or Visa number for **immediate shipment.**

Send for your free copy of HOT DRUM NEWS right now, and see how you could use one of these kits to recycle a drum into a wood heater that will keep you **warm & cozy this winter.** Full assembly instructions are included in the **HOT DRUM NEWS** so you can see how easy it will be.

The **HOT DRUM NEWS** also has information on water heating, fireplace conversions, central heating, installing a flue, and other hints for all wood burners. Also learn about **TIN-CUTTER, 'The 44-gal Tin Opener'.** Designed for cutting 44 Gallon drums, it also slices through roofing iron as if it were paper. A very useful tool for any handyman.

Write to: **HOT DRUM, Box 3(E), Maleny, Qld. 4552.**
or ring: **(071) 942496**

ENERGY PULSE . . . ENERGY

ALTERNATIVE TECHNOLOGY CENTRE

'Do-it-yourself' school education tours are encouraged by the Alternative Technology Centre at Oxley, Victoria, established by Andrew Blair of *Outlook Alternatives* five years ago. Teachers are provided with a 30-minute cassette tape and teaching materials, with various activities for their students, including an energy quiz. By not having to provide staff for the visit, the Centre has been able to reduce the cost to $20 per bus load.
Energy devices at work include a wind generator, a 12V solar electric system operating lights, an electric fence, water pressure system and a ceiling fan, a solar radio, solar still, solar griller, solar oven, various solar hot water systems, Savonius wind rotor and a hydraulic ram. Farm animals such as beef cattle, goats, rabbits and bees and wildlife, irrigation systems, a woodlot, vegetable garden and wood stoves may also be seen.

☐ *Outlook Alternatives*, Greta West Road, Oxley. Postal address for bookings: RMB 9010, Wangaratta, 3678. Phone: (057) 27 3261.

GREEN TEACHER

Green Teacher is the title of a proposed radical new journal which will deal with issues and provide classroom material on the environment, alternative technology and peace studies for teachers and school children. Its editor will be Damian Randle, education officer at the Centre for Alternative Technology in Wales, who recently visited Australia. There will be two issues each British school term.

☐ Advance subscriptions, £stg.10.00 or $A.24.00 by international money order payable to Damian Randle, CAT, Llwyngwern Quarry, Machynlleth, Powys, Wales SYO 9AZ, United Kingdom.

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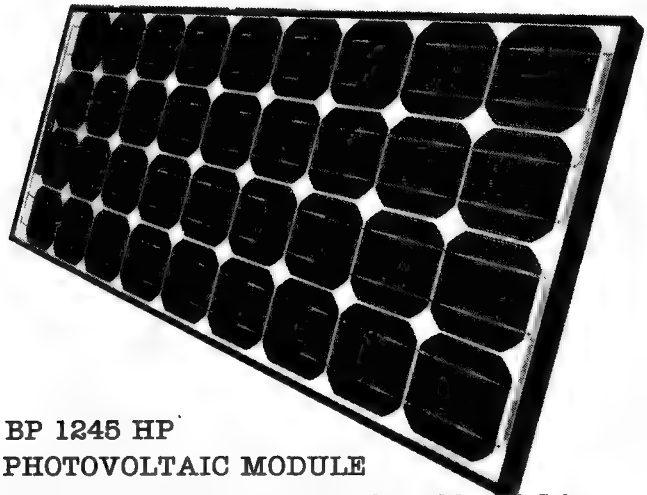

BP 1245 HP PHOTOVOLTAIC MODULE

This photovoltaic panel just released by BP Solar Australia has the highest rated output — 45 watts (W) — of any solar panel manufactured in Australia. The panels have 36 squarish monocrystalline cells protected by glass laminate and mounted on a black anodised aluminium frame with slotted holes in its base for fixing from top or bottom.

Bypass diodes incorporated in the junction box prevent potential problems from 'hot spots' caused by localised shading of the cells. A blocking diode prevents reverse current flow at night. There is a 5 year output guarantee.

Technical: Peak power output 45W; peak power voltage 17.4V, open circuit voltage 21.2V; current 2.58 amps. Size 414 mm x 975 mm, weight 6.5 kg.

THE SOLAR WORKSHOP

The *Solar Workshop*, featured in Earth Garden 45, has now been completed and is being used for workshop meetings and activities of the Alternative Technology Association. Some scheduled events: June 3: Stephen Ingrouille of Going Solar on 10 years of alternative technology in Australia and wood heaters; July 1: Film night with Annual General Meeting; August 5: Composting toilets and Suntrac solar water heater; September 2: Simon Harvey on design of the Solar Workshop and water pumping windmills; October 7: Telecom solar cell and passive cooling research and electric vehicles: ☐ *The Alternative Technology Association* is at 366 Smith Street, Collingwood, 3066 (annual membership $18.00 includes subscription to *Soft Technology* magazine). The Solar Workshop is at Lee Street, Brunswick (Melbourne).

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It's on at Mudgee

Friday & Saturday, July 18-19, 1986

Mudgee, New South Wales, will be the place to find out all about large or small scale farming this July when the local showground again becomes the venue for the annual Small Farms Field Days.

This year's main theme is "Everything you ever wanted to know about farming but were afraid to ask". There will be information for farmers, both big and small, on a whole range of farming practices from machinery to sheep, goats to chooks, and fruit trees to economic water use. The Mudgee Field Days are run in conjunction with the Department of Agriculture of NSW, who provide talks and demonstrations and advice on growing, harvesting and uses of agricultural crops over both days.

This year there will be a focus also on the 'end uses' of farm products, including wool, fish, pigs and timber. You will be able to see bushcraft experts at work, tanning, wood chopping and blacksmithing, or turning timber into fine furniture and musical instruments. Learn how to raise pigs, smoke hams, cure bacon and cook pork and ham. Watch a video on tractor safety and find out how to select a tractor to suit your needs and how to drive and service it properly.

Ted Smith, head of the Aquaculture School at Hawkesbury Agricultural College, will talk on Fish in Farm Dams, including raising and feeding marron, dewfish and yabbies. As part of the demonstration, the end use of this tasty product will include microwave cooking and tasting of freshwater fish.

The Field Days will be opened by television personality Peter Russell-Clarke, who will also talk on the preparation of honey, cheese and dairy products. It might be a good place for city slickers to find out where their food comes from!

A large commercial exhibition runs parallel with the 'information' part of the Field Days with displays, stands and tents, demonstrating and exhibiting a variety of equipment of interest to people on the land. The Mudgee Small Farm Field Days have grown from a small one-day show in 1977 to become a major farming event which last year attracted 16,000 visitors and 280 commercial exhibitors over two days.

☐ For further information, contact the Field Days Office, PO Box 12, Mudgee, 2850, phone (063) 72 3615 or Mudgee Tourist Centre (063) 72 1944.

All you ever wanted to know about farming and were afraid to ask

If you're a serious farmer or you're just thinking about joining the 'cockies', get to the Mudgee Small Farm Field Days.
Talk to the experts and ask the questions you were never game to ask a 'real cockie'. Find out about sheep, cattle, fruit trees, goats, vegetable farming, flower growing, horses, pigs, geese, wool spinning and weaving. . . . .in fact 'All you ever wanted to know about farming and were afraid to ask'.
Thousands of demonstrations, hundreds of talks on just about every aspect of farming. It's a fun day for the whole family. Come to the Mudgee Small Farm Field Days, Mudgee Showground, Friday 18th and Saturday 19th July.

For further information and a FREE program, contact the Secretary, Mudgee Small Farm Field Days, P.O. Box 12, Mudgee 2850.

PHONE (063) 72 3615

MUDGEE SMALL FARM FIELD DAYS

JULY 18-19 1986

AT MUDGEE SHOWGROUND

CAAMO712A

Farming as if the earth matters

SUSTAINABLE AGRICULTURE

A sustainable agriculture does not deplete soils or people.
WENDELL BERRY, Meeting the Expectations of the Land, 1985.

Sustainable agriculture is a new-old kind of food production.

It looks back to the traditional growing methods of the past, before the emphasis on mass production, quick profits and the consequent leaching of the soil. It looks forward to a future influenced by land ethics, when the earth's fertility will be maintained and nourished in return for sustaining the people who live from the food it produces.

In the last decade, various types of natural or ecological farming — biodynamic, organic, permaculture — have been taken up by new settlers bringing new values with them from the cities and also by many traditional farmers. They grow their own food, usually on small land holdings, by intensive methods, planting a diversity of crops and using no artificial fertilisers or pesticides. There are few inputs from outside the smallholding: organic wastes are returned to the soil as fertiliser.

In contrast, the 'industrial' farmer plants a single cash crop or runs sheep or cattle over a large area of land, overdosing the soil with artificial nitrogenous fertilisers and spraying with chemicals to destroy insect pests. The farmer has little control over the cost of inputs such as petrol and fertilisers from outside the farm. This kind of agriculture is beset with problems: the sugar industry is a good example.

All of us are concerned with the question "What kind of a world do we want?". We believe that the way our food is produced, the quality of that food and a respect for our Australian bush and farmland are of crucial concern. The forces of nature and the pull of history are behind sustainable agriculture now, but many changes must be made before it becomes a widespread reality. We urge you to read this overview and access to sustainable agriculture, Dr. Brian Roberts' long article on Land Ethics and the many practical articles in this 50th issue of **Earth Garden**.

Meanwhile, the best way to learn about something is to do it, by starting a garden, planting tree crops, joining an organic club or environmental action group, getting together with friends and people with similar interests. Let's change the world together — **Irene & Keith.**

Biodynamic Agriculture

Biodynamic Agriculture was inspired by the Austrian philosopher and educator Rudolf Steiner, founder of Anthroposophy, who gave a series of lectures to a group of German farmers who sought his advice and instruction in 1924, a year before his death.

The name *Biodynamics* comes from two Greek words: *bios* (life) and *dynamis* (energy or force) and refers to "working with the energies which create and maintain life."

Dr. Steiner approached agriculture from his insight that "nothing happens in living nature that is not in relation to the whole." Plants, for example, depend on the interaction between living soil, rich in organic matter, trace elements and micro-life, plant relationships (companion plants), farm animals, bees and birds and the forces of energy of the sun and moon. He set forth practical guidelines and methods for farmers and gardeners which include the use of precisely mixed herbal preparations (Preparations 500-508) for sprays, liquid manures and compost additives and the use of ground minerals, cow manure and animal horns and organs. All the preparations are biological. Preparation 508 for example is a 'tea' made principally of horsetail *(Equisetum arvense)*.

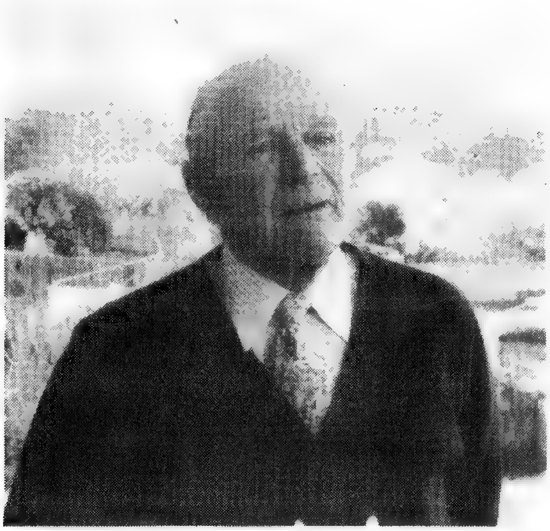
Rudolf Steiner.

From the late 1930s Robert Williams carried out experiments with biodynamic methods under Australian conditions and made B.D. preparations at his property, 'Kawana' at Roseville in Sydney. He died in 1984. The Robert Williams Bio-dynamic Agriculture Foundation, formed in March, 1985, aims "to foster the growth and development of all aspects of Bio-dynamic agriculture within Australia."

Alex Podolinsky began farming using B.D. methods at Powelltown, Victoria in the1950s, lectured on biodynamics and founded the Biodynamic Agricultural Association of Australia in 1961.

Biodynamic agriculture is strong in countries where it was established before organic farming was popularised, such as Germany, Switzerland, Holland and Belgium. There are hundreds of biodynamic farms of all types in Australia, and the quality of cereal grains sold under the *Demeter* label is especially good.

See: **Fifty years of bio-dynamics** in Earth Garden No. 10



Mr P. A. Yeomans

Keyline started about 30 years ago when I tried to convert a thousand acres of derelict and abandoned land into a fertile farm. As the plan developed I came to realise that the farm — farming land — was the most critically important landscape in the total ecology of man. I believe now, that starting a long time ago, farms were planned inadequately, and the practice of farming gradually caused the loss of the healthy balance which was inherent in the former natural landscape. Thus water pollution had its start with farm runoff water — of course it started slowly. The principle fault was in the management of water — or the lack of management of water — in the soil, over the land surface and in the streams. This fault carried through into the design of the villages, the towns and the development of the cities. Now all the waters of the land carry substances which should not be in water — and even the oceans are affected.

P.A. YEOMANS,
Address to Murray Valley Development League, June, 1972.

THE KEYLINE SYSTEM

The Keyline system of landscape and water design was originated by Percy A. Yeomans, author, farmer, miner, inventor and machinery manufacturer, during the 1940s and 50s on 1000 acres of what was then poor, unproductive land at Richmond, 60 km west of Sydney. He outlined the system and its practice in his books, *The Keyline Plan* (1954), *The Challenge of Landscape* (1958, 1966), *Water for Every Farm* (1965, 1968, 1978) and *The City Forest* (1971). Mr. Yeomans died in 1984.

P.A. Yeomans named the three basic shapes of land contours as main ridge, primary valley and primary ridge and the Keypoint, which defines the Keyline, as the break of slope that occurs in any primary valley. This, said Mr. Yeomans, is the essential starting point of a water control system in the landscape. So rain is used where it falls — on the farm.

In farming, Keyline uses a series of dams for water storage and channels for fast flood flow irrigation, chisel ploughing to improve fertility and tree belts for oxygen, water retention, windbreaks and stock shade. A string of fertile, flourishing cattle and dairy farms in the Kiewa Valley, south of Wodonga, Victoria is a showplace for Keyline which has been in use there for 14 years.

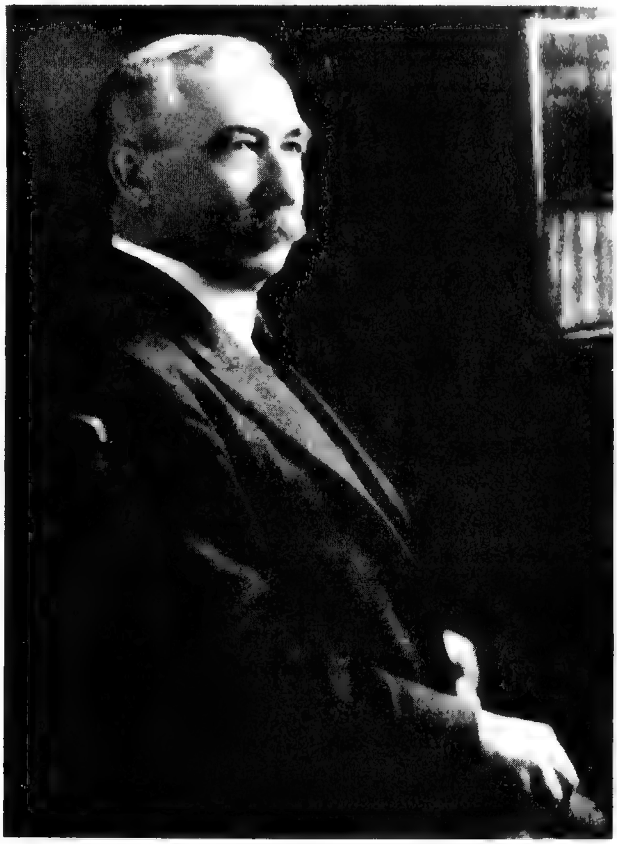
See: **Interview with P.A. Yeomans, The City Forest & The Kiewa Farms** in Earth Garden No. 2 and **Keyline** in Earth Garden 22/3

Soil fertility is the condition which results from the operation of Nature's round, from the ordinary revolution of the wheel of life, from the adoption and faithful execution of the first principle of agriculture — there must always be perfect balance between the processes of growth and the processes of decay. The consequences of this condition are a living soil, abundant crops of good quality, and live stock which possess the bloom of health. The key to a fertile soil and a prosperous agriculture is humus.

SIR ALBERT HOWARD, An Agricultural Testament, 1940.

ORGANIC FARMING & GARDENING

Organic farming and gardening relies on the use of biological methods and organic materials to build up and restore fertility in the soil and to produce food crops without the use of synthetic (chemical) fertilisers or pesticides.



Sir Albert Howard

Organic materials may be defined as 'anything which has lived once', such as farmyard animal manure or ploughed in wheat stubble; while biological methods are those which mimic the processes of nature, for example in the creation of rich topsoil in a forest from generations of falling leaves.

Prof. R. Lindsay Robb, a consultant to the Soil Association of Britain, gave this definition of biological or organic farming: "A form of land use designed to produce optimum yields from crops and livestock, of the highest nutritional values, free from anything detrimental to health and without impairing future productivity."

Sir Albert Howard,an agricultural adviser to the Indian State of Indore in India from 1924-1931 is generally acknowledged as the 'father of organic agriculture' He first outlined the *Indore* method of making compost in his book *The Waste Products of Agriculture* in 1931 and evolved an integrated system of agriculture which he explained in his pioneering work *An Agricultural Testament*, 1940.

The age-old traditional use of compost and mulch is a cornerstone of organic culture. Other strategies include the addition of mineral fertilisers and trace elements, biological sprays against insect pests and diseases, crop rotation, polyculture: a diversity of crops (versus monoculture: a single crop), tree belts, humane livestock management and the encouragement of earthworms, bacteria and other micro-life in the soil. Briefly, composting is the accelerated decay of organic wastes, such as vegetable scraps, weeds, animal manure, grass clippings and leaves into rich humus. Mulch is a layer of organic matter placed on top of the soil around growing plants which smothers weeds and helps retain moisture while breaking down into humus.

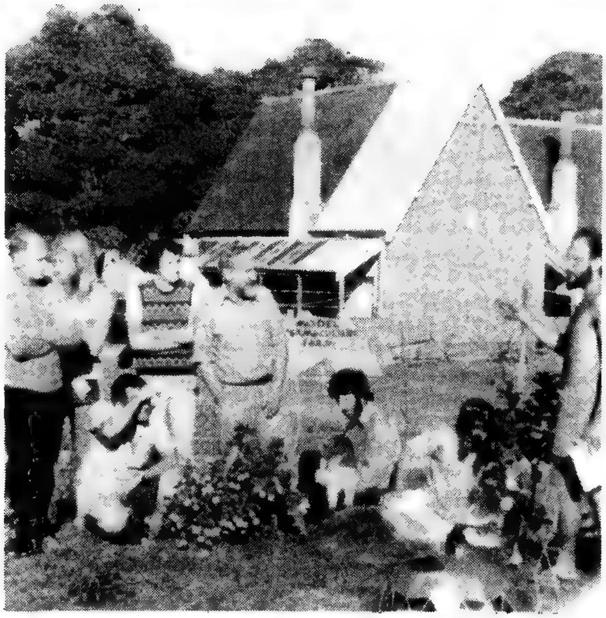
Some notable books which deal with organic growing skills and methods for Australian conditions are *Organic Gardening*, by Peter Bennett (ANZ Book Co.), *Esther Deans' Gardening Book* (Harper & Row), *A Guide to Organic Gardening in Australia*, by Michael J. Roads (Mary Fisher Bookshop) and *The Organic Gardener's Companion*, compiled by Anne Heazlewood (Reed).

See: *The organic idea, The historical basis of compost, A traditional farmer* and other articles in Earth Garden 30; *Agribusiness versus Eco-farming, Making Compost, Pest Control* and other articles in EG 22/3 and *Organic Farming, The menace of monoculture* and other articles in EG9.

> *Permaculture is not gardening, it is design. It does not espouse a particular technique whether organic, ionorganic or biodynamic, etc. I personally espouse the organic or natural gardening approach. I talk and write about it, not about pesticides or herbicides. Permaculture is not confined to gardening, or plant growing , it is a design system involving the placement of all the elements of the landscape, of the living system, in the right relationship to each other.*
>
> BILL MOLLISON, The Parable of the Chicken, in The Best of Permaculture.

PERMACULTURE

The name Permaculture (a permanent agriculture) was coined by Bill Mollison and David Holmgren in their book *Permaculture One*, A Perennial Agricultural System for Human Settlements (Corgi, 1978). Its basis is the use of perennial food plants, especially tree crops, in an integrated, designed system aimed at local self reliance.



Bill Mollison

In *Permaculture One & Two*, Mollison proposes a revolutionary new agriculture which will provide food from forests for man and animal and replace annual plants and grains with perennials, using little energy input. It is based on a set of ideas from many sources which do, in fact, embrace the philosophies and practice of organic and biodynamic methods, as well as Keyline, low tillage farming, urban forestry (the edible landscape), city farms, mulch gardening, Jean Pain's methods and those of Masanobu Fukuoka (and lately ethical investing), which all fit into its criteria.

Promoted by the dynamic and persuasive Bill Mollison, permaculture has spread out from Australia in less than a decade to shake up and influence alternative thinkers and doers all around our messed up world . Working permaculture systems are being set up by many communities and groups of people, especially in the United States.

See: **Permaculture** (talk by Bill Mollison) in Earth Garden 22/3 and **The One-Straw Revolution** in EG25

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Sustainable agriculture directory

Biodynamic Methods

Robert William Bio-dynamic Agriculture Foundation, The Secretary, C/- 15 Spurwood Road, Turramurra 2074. Membership, $10.00 annually, includes subscription to the quarterly magazine *Casuarina.*

Biodynamic Agricultural Association of Australia, Alex Podolinsky, PO Powelltown 3797.

New Zealand Biodynamic Association, C/- Mrs. S. Wall, 52 Duart Road, Havelock North, New Zealand. Newsletter.

Publications

Rudolf Steiner Book Centre, 307 Sussex Street, Sydney 2000. Books on biodynamic farming and gardening, including *Agriculture,* by Rudolf Steiner, *Bio Dynamic Introductory Lectures,* by Alex Podolinsky, *The Bio-Dynamic Method of Agriculture,* by Charley Sievers and *The Bug Book,* by Helen and John Philbrick are in stock. Phone (02) 2645169.

BD Preparations

Terry Foreman, Rosencross Farm, Black Mountain 2365.

David Julian, 351 Galston Road, Galston 2519. Phone (02)6531169.

Biodynamic Agricultural Association of Australia, PO Powelltown 3797.

Introductory Course in Biodynamics

An introductory course in the principles and practice of biodynamics will be held in Sydney this June. It will include four evening lectures and a field day and cover BD history, main principles, nutrition, pest control, preparations, soil and compost. Further information from Rudolf Steiner Book Centre, phone (02) 2645169).

Biodynamic grain

Four Leaf stoneground flours, rolled oats, from F.L.Milling Pty. Ltd., Tarlee 5411.

Demeter Bakery, 65 Derwent Street, Glebe 2037.

Keyline System

Kiewa Valley Keyline Club, Geoff Wallace, RSD Kergunyah, via Wodonga 3691.

Publications

Water for Every Farm, Using the Keyline Plan, P.A. Yeomans, Second Back Row Press, 1981, 251 pages, illustrated. From Second Back Row Press, PO Box 43, Leura 2781. ☐ $9.95, add $1.00 for postage.

Consultants

Environ Management Systems Australia, The Environment Centre, 285 Little Lonsdale Street, Melbourne 3000. A group of Keyline consultants, who include Ken Yeomans, G.V. 'Vern' Lawrence and Mervyn Barton, a Keyline farmer in the Kiewa Valley. Also publications and information.

Organic Growing

The Organic Gardening and Farming Society of Tasmania, P.O. Box 228, Ulverstone 7315, 30 pages, quarterly ☐ $8.00 yearly. This Tasmanian based magazine has become the national voice of Australia's organic gardening and farming movement. It regularly features articles on growing, compost, livestock, food preserving and fencing.

Others

Many organic groups issue regular magazines and newsletters with articles and hints on growing in local climates, such as *Hogs Tales,* from the Hunter Organic Growers Society in NSW, *The Living Soil,* from The Soil Association of South Australia or *The Organic Grower,* from Organic Growers' Association of Western Australia.

Organic Groups

Brisbane Organic Growers Group (BOGG), P.O. Box 550, Fortitude Valley 4006.

Camden Haven Organic Gardening Society, 27 Camden Street, North Haven 2445.

Canberra Organic Growers, 129 MacKenzie Street, Hackett 2602.

Channel Smallholders Group, Sec. T. Tonya, Woodbridge 7162.

Darling Downs Natural Growers Group, Education Centre, Baker Street, Toowoomba 4350.

East Gippsland Association of Organic Agriculture, Kirrinarri, Wiseleigh 3885.

Henry Doubleday Research Association (HDRA), Sahara Farm, Robson Road, Kenthurst 2154.

Healthy Soil Society, PO Box 196, Atherton 4883 or PO Box 112, Kuranda 4872.

Hunter Organic Growers Society (HOGS), PO Box 403, Cessnock 2325.

Kiewa Valley Organic Society, RMB 1059A, via Wodonga 3691.

Manning Organic Growers, Wallabi Point 2491.

Maryborough Organic Group, 37 Goldsmith Street, Maryborough 3465.

Mudgee Organic Growers Association, Lot 14, St. Fillians, Home Rule, via Mudgee 2850.

National Association for Sustainable Agriculture (NASA), C/- PO Faulconbridge 2776.

Organic Farming & Gardening Society of Australia, Box 2605 W, Melbourne 3001.

Organic Growers Association of Western Australia, P.O. Box 213, Wembley 6014.

Organic Growers Geelong, Church Street, Batesford 3221.

Organic Growers of South Gippsland, RSD Meeniyan 3956.

Queensland Healthy Soil Society, P.O. Box 112, Kuranda 4872.

Self Sufficiency Society, C/- Burnley Horticultural College, Swan Street, Burnley 3121.

Soil Association of South Australia, GPO Box 2497, Adelaide 5001.

Soil Association of Tasmania, TEC, 1 Bathurst Street, Hobart 7000.

South Queensland Organic Group, 8 Penamber Court, Benowra 4215.

Willing Workers on Organic Farms (WWOOF), Lionel Pollard, 7 Duncan Avenue, Boronia 3155.

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Permaculture

There are permaculture groups throughout Australia and New Zealand. These main branches will supply the name of your nearest group and tell you about meetings and design courses. (include SAE when writing).

Permaculture Institute, PO Box 96, Stanley 7331. Permaculture HQ.

Permaculture Association of Central Australia, PO Box 3777, Alice Springs 5750.

Permaculture Melbourne, Christine Pinniger, 24 Lucerne Crescent, Alphington 3078.

Permaculture Nambour Inc. PO Box 630, Nambour 4560.

The Permaculture Association of South Australia Inc. 131 Coglin Street, Brompton 5007.

Permaculture Sydney, PO Box N27, Petersham North 2049.

Permaculture Western Australia (PAWA), PO Box 430, Subiaco 6008.

Permaculture New Zealand Inc. RD 2, Kaiwaka, New Zealand.

Publications

Permaculture One & *Permaculture Two* ☐ $14.50 each posted from Tagari Publications, PO Box 96, Stanley 7331. Write for publications list.

Permaculture Book Services (NSW), Damien Lynch, PO Box 3138, Sydney 2001.

Permaculture, Journal of the International Permaculture Association, Ed. Terry White, P.0. Box 367, Maryborough 3465, quarterly, 40 pages, illustrated, ☐ $13.00. A source of continuing information on permaculture, listing contacts, groups, courses and resources.

Consultants

Arbutus Agricultural Consultancy, John Fargher, PO Box 329, Balhannah 5242.

Carlotta Permaculture Consultancy, PO Box 56, Nannup 6275.

David Holmgren, 124 Garton Road, North Carlton 3054.

Permaculture Consultancy (SA), David Blewett, PO Box 102, Glen Osmond 5064.

Permaculture Consultancy (WA), Denis McCarthy, PO Box 789, Fremantle 6160.

Permaculture Design Collective, Peter Lockyer, 76 Malop Street, Geelong 3220.

Permaculture Design Course Tapes, Treespeak Studio, PO Box 10, Nannup 6275.

Permaculture Services Ltd, PO Box N27, Petersham 2049. Permaculture design consultants, who include Max Lindegger, Lee Harrison, Alice Weisz, Geoff Young and Robin Francis.

Permaculture Consultancy (Qld), 56 Isabella Avenue, Nambour Heights 4560

Sandy Fritz in the garden.

NASA takes off!

By Sandy Fritz

The National Association for Sustainable Agriculture was inaugurated at Kiewa Valley at the end of March, 1986. In this article I will outline the background to the Association, who it involves, what we plan and how far along we are in getting it done.

First, it is helpful to briefly clarify that 'sustainable' agriculture generally includes a variety of alternative farming methods such as organic, permaculture, biodynamic, biological and ecological. For the most part, these systems exclude or severely restrict the use of synthetic fertilisers and pesticides. They are systems of agriculture able to balance productivity with low vulnerability to problems such as pest infestation and environmental degredation.

Background

In 1983 I wrote to about 15 organic societies and the S.A. Soil Association suggesting that we meet to discuss the promotion of organic practices in mainstream agriculture. The stimulus to my action was the increasing problems associated with conventional agriculture. Australian agricultural soils were — and are — being degraded by salinity and acidity. Erosion is not only affecting the land but it carries sediment and chemical runoff into rivers causing silting and pollution, disturbing the ecology of the water and creating a hazard for animals and humans who depend on it. The growing dependence on agricultural chemicals presents economic and agronomic problems for the farmer as well as major health risks for farmers and consumers.

I was hoping to establish more communication between groups involved with alternative methods of production and with individual organic producers and would-be organic producers. I believed this communication would assist our learning from one another. Also, by combining resources we could increase the availability of information to farmers as well as increasing public awareness and influencing the direction of agricultural research and education.

In response, the various groups shared my concern and belief that by working together we could create a positive change. Correspondence which followed resulted in a series of meetings to discuss a permanent association between the groups. Throughout 1984 meetings in Tasmania, Victoria, NSW, South Australia and Western Australia endorsed the idea of a National Association. Each State elected delegates to a Steering Committee to draft a Constitution for the Association and to develop some ideas for action.

Throughout 1985 delegates communicated with the groups in their State and with one another by way of phone calls and correspondence. Two major meetings were held in Victoria (April in Kiewa and October in Hamilton). By the end of the year we put forth a draft Constitution for wider consideration. We also began discussing what action the Association should take in its aim to promote sustainable agriculture throughout Australia — what was desirable and feasible.

Consistent with the proposed Constitutional structure, State Councils were formed in Tasmania, ACT/NSW, W. Australia, Victoria and S. Australia. Two delegates from each Council were elected to form the first National Committee of the Association. That Committe met in Kiewa this Easter to inaugurate the Association, adopt the Constitution and proceed with the work ahead.

Who this involves

The Association is important to both country and city people. The Association is primarily composed of organic and other growing groups, such as Permaculture, Soil Associations and The Channel Smallholders of Tasmania. Consumer groups such as the Allergy Association and Organic Retailers Group are also involved. Their participation has been encouraged because it is recognised that how food is produced affects all of us; both in terms of our individual health and in terms of what happens to Australia's agricultural land which future generations depend on.

A CSIRO survey indicates that a large proportion of Australian consumers are concerned about agrichemicals in their food. Many of these people are actively seeking foods produced without hazardous chemicals. We want to increase the availability of such foods and the consumers' ability to be confident about its quality. In order to do this we need consumer support for policies that assist and encourage sustainable agriculture.

The work ahead

The Association aims to encourage producers in adopting practices which will result in sustainable agriculture. In order to do that we plan to:

- establish a system for the collection and distribution of information relating to sustainable agriculture;
- develop standards for products grown under sustainable systems with an infrastructure for certification and monitoring;
- assist in the distribution of these products;
- promote research related to sustainable agriculture;
- increase public awareness; and
- lobby governments regarding policies relating to sustainable agriculture.

How far along are we?

Proposals are now being drafted to a Clearinghouse which will collect and distribute information relating to sustainable agriculture. The Association will be seeking funds to establish this information centre. Two other areas, in which some early progress has been made, are in the development of National Standards and education relating to sustainable agriiculture. These are discussed below.

Some readers may be aware that a Standards Committee has been working for some time in Victoria. This Committee is now being enlarged by gaining the participation of individuals around Australia who are engaged in sustainable production or work related to it. Their expertise will help ensure that we adopt sound Standards that are appropriate to Australian conditions. Farms using production methods that meet these Standards will be certified and can use a trademark indicating that their produce is grown under sustainable agriculture. These Standards will help farmers who are new to these practices to clearly understand what they are aiming for, which practices are allowable and those which are excluded. The standards will be important to consumers, enabling them to know what they are buying. We aim to have this system working by 1987.

Last year a proposal for the adoption of sustainable farming was put to the School of Agriculture at Hawkesbury Agricultural College at Richmond, NSW. It was suggested that the college develop an accord about what constituted 'sustainable' and that this be adopted as the basis for policy guiding both academic education at the college and production methods on the college farms. The proposal also included:

1) recommendations regarding the availability and promotion of literature about sustainable agriculture in the library;
2) recommendations about farm staff development; and
3) ideas about how transition of the college farms to more sustainable practices could take place through action research by staff and students.

The recommendations were agreed to. A Farm Policy Group is now continuing to explore the role of the college farms and is drafting criteria by which that role can be evaluated.

The criteria include:

productivity (yield per land unit/labour/energy/input cost);
stability (the constancy of production in the face of environmental fluctuations);
sustainability (resilience to environmental stress);
equitability (extent to which division of products and power is egalitarian);
autonomy (extent to which the system operates independent of external forces & inputs); and
solidarity (the degree of cohesiveness or integration between units making up the system).

These factors will form the basis for policy development. They will also guide farm production systems and agricultural education at Hawkesbury.

Conclusion

After two years of work a National Association for Sustainable Agriculture (NASA) has been formed. A Constitution has been adopted. A course of action has been decided upon. Work has started on National Standards, education and the establishment of a Clearinghouse. NASA is an important step in achieving a more sustainable and safer food system in Australia. In doing so it will depend on the support of both country and city people.

☐ Associate membership in the Association is available. The fee is $10.00. Send to NASA, C/- PO Faulconbridge 2776 ♣

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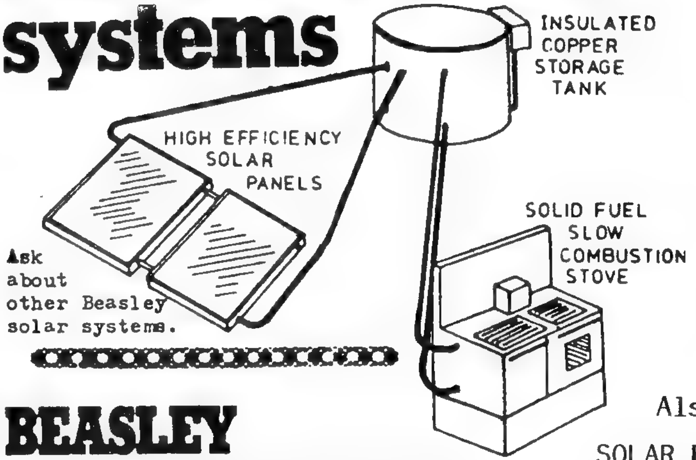
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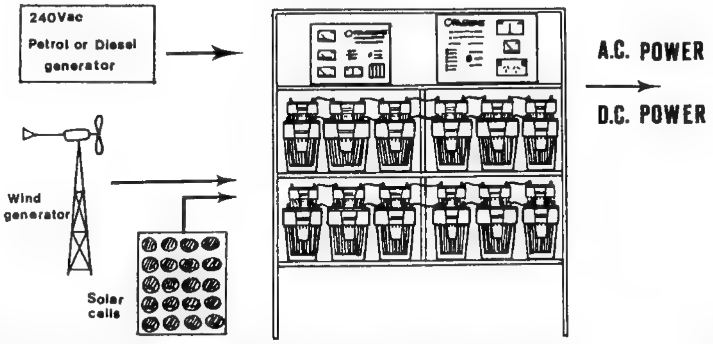

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N. Druce, PO Box 62, Tumbarumba, NSW, 2653. Phone: (069) 48 2623.

Land for sale, Tweed Valley, adjoining State Forest. An abundance of wildlife in this natural bushland/tropical rainforest setting. Build your own cabin and enjoy the good life. Price from only $15,950.

Phone Arthur Jones (066) 71 160 (Real Estate Agent), or write to 29 Wharf Street, Murwillumbah, NSW 2484.

Eight year old two bedroom house and garage. Fruit trees, room for garden, fowls. Near school, bitumen road, wate and 240 V, professional and casual work. On River Murray at Swan Reach. Price $36,000. Plenty of irrigated land for sale (cheap).

Ring (085) 60 1028, W. Hall, Nildottie, SA 5238.

For sale, secluded 57 acres hilly bushland with small A-frame house on slab, 11 km south of Gympie, Queensland. Phone, solar power, inverter, concrete tank, wood stove, hot water, shower, newly painted exterior. View, permanent dam, easy access, State Forest three sides, 40 small fruit trees. Price $65,000.

Peter Wilson, 23 Sturdee Street, Macksville, NSW, 2447. Phone: (065) 68 1606.

80 acres of NSW coastal bush ranges for sale, bordering National Park and fronting the Tuross River, 1¼ hours 2WD access west of Bodalla. Timbered river flats rise to steep timbered slopes. Natural wildlife abounds. A beautiful isolated block suitable for weekending or living. Phone but no power. Price $39,500.

A & C Tyrrel, 276 Crawford Street, Queanbeyan, NSW 2620. Phone (062) 97 7985.

Community unit for sale: 'Auchendarroch', Mt Barker, South Australia. Large 4 bedroom self contained, alongside six other families. Set in 5 acres beautifully kept garden. Share in co-operative lifestyle and ownership of anhistoric property. Close to schools, shops, transport. Other rooms and units available. No Strata title. Price $88,000 ONO.

Bill & Celia Carter, 'Auchendarroch', Adelaide Road, Mt Barker, SA 5251. Phone (08) 381 0907, business (08) 391 1550.

Share for sale in 800 acre property, south of Woodburn, north coast of NSW. Abundant wildlife, eucalypt forest, bush and heath, in heavy rainfall area and within reach of untouched beaches and fishing. Share priced at $69,000, includes private use of 10 acres with attractive four-bedroom home, large working shed, generator, greenhouse, above-ground swimming pool, various fruit trees; part ownership of 650 acres, use of community facilities such as tractor and implements. Community is set up with unique legal structure.

Our aim is to live in peace and harmony with each other and nature and work towards becoming more self-sufficient, using permaculture principles and organic gardening, etc. No illegal drugs.

Please write to: Rosemary Zillig, 46 Ubrihien Street, Lismore, NSW, 2480, or phone: (066) 21 8939.

One-seventh share in 422 acres (tenants in common) at Elands, 64 km west of Taree. Timber home, 2 kVA generator, 12 V light system, LPG 9 cu ft fridge and large stove, pot belly and washing machine. Three ton, 4WD International D130 truck, unregistered. Permanent creeks, excellent school and local community. Price $26,500.

Patrick Hynes, C/- PO Dangar Island, NSW 2253. Phone (02) 455 1593.

Lillifield Community has 300 acres of beautiful land in the hills between Lismore and Murwillumbah. It's about 15 minutes from Nimbin. Kyogle Council has approved us and we have completed 6 km of roads and built 10 dams. There are swimming holes and a small waterfall. We are inviting people to help us with our further development, people who will respect this beautiful land as well as each other. The share price is currently $12,500.

If this appeals to you, please write to us at 'Lillifield', Lillian Rock, NSW, 2480, or phone us on (066) 89 7224.

Membership available in Co-operative, multiple occupancy, 238 hectares, partially cleared. State Forest and sea surrounding. Community now 80 residents in 8 hamlets. Mild climate, 68 inch rainfall. No grid electricity, no dogs or cats. Community school. Aims social harmony, environmental responsibility, economic independence. Coffs Harbour 30 minutes. $4,300 per adult.

Write, Membership Secretary, Bundagen, PO Repton, NSW 2454. Phone (066) 53 4529.

Six acre share in Starlight Community in Queensland's Sunshine Coast hinterland. Rainforest valley, 20 minutes drive to Coolum on the coast. House, 2 storey, 3 bedrooms, plus sturdy timber home. Two water tanks with 4,000 gal capacity storage, solar electric system (4 Solarex panels with two battery banks), Rayburn combustion stove in kitchen, Scandia cast iron fireplace in loungeroom. Verandahs off both floors, sundeck. Vegetable and herb garden, landscaping includes Japanese-type garden with tree ferns, parking. If interested, will send colour photos. Price $55,000.

Geoff & Pam Blake, 19 Mount Street, Toowong, Qld, 4066. Phone: (07) 371 0418.

Nice 32 acre block with two-bedroom house Buildex built four years ago. Permanent creek, fruit trees, electricity, phone, 14 miles north of Gympie. Veg garden. Handy Sunshine Coast. Lightly timbered, with sheds, horse yard, good fences. Off main road, northerly aspect. School bus. Price $65,000 or nearest offer WIWO.

Phone John Kumar (071) 83 1154, or write Old Gympie Road, Curra, Qld, 4570.

Share for sale, $8,000, 170 acres in lush country with perennial creek and river. Secluded valley, 30 minutes drive from Taree, a good service centre four hours north of Sydney. Community leanings, craft, horticulture and solar design.

Merelyn Saunders, Comboyne Road, Killabakh Creek, NSW, 2429.

People interested in forming corporate bodies and sharing good high country near Stanthorpe, south-east Queensland, with view to having common agricultural and recreational land. Prices $200-$300 per acre.

Contact Robert Batterham, 'Glen-Dhu', Dalveen, Qld, 4374.

Non-smoker, horse/cat lover, preferably own caravan, to share 20 acres with office working lady (35). Neglected vegie garden if interested. Free riding/horse care instruction and low rent ($15 pw) in exchange for help with domestic/farm chores. $200 bond. Regret no grazing available.

J. Gallup, PO Box 191, Ipswich, Qld, 4305. Phone: (075) 65 1801.

Northern NSW, one-ninth share in 512 acres of eucalypt/rainforest, ⅓ good pastures. One two-bedroom country style house with verandahs, only 33 km north of Kyogle, NSW. Furniture, Rayburn stove, HWS, fruit trees, solar powering, three dams, mountain spring, community house, dairy. Price $40,000.

Phone: Dermot Quinn or Steve (066) 36 4263, or write to Rosebery Creek Road, via Kyogle, NSW, 2480.

15 acre share in a community on the Sunshine Coast. The land, heavily timbered, rises from a rainforest creek to a ridgetop overlooking the coast. Share includes tradesman-built three-bedroom timber and stone home with own power, combustion stove, solar hot water, septic, sheds, dam, 140 fruit trees, phone, school bus. Price $48,000.

Contact C. & M. Brown, C/- PO Yandina, Qld, 4561. Phone: (071) 46 7611.

Share in community (1,000 acres), 16 km from Kyogle, 25 shares total. This share has established cottage, fruit trees, spring, 1,000 gal tank, road — 3 km to school bus. Community land shared. Creek on property. Shall do some free tractor work for buyer. Suit young couple. Price $13,500 ONO.

B. Isbister, 31 Stratheden Street, Kyogle, NSW, 2474. Phone: (066) 32 1262.

Land for sale. Five shares available in a spiritual community of 25 shares. 320 acres of magnificent Nimbin rainforest, streams and gullies running down to undulating lychee and avocado orchards. Price $12,000 per share.

Contact R. Southon, 24 Roebuck Street, Redhill, ACT 2603. Phone (062) 95 6564.

One 25th prime share in community 16 km from Kyogle, 10 acre private holding bordered on two sides by creeks, new community on other two sides. Paid and maintained boundary fences. Good timber and cleared areas. Excellent stable, level building sites. Gravity fed spring, also pump from main creek. Good access, no need to go through rest of community. Price $10,000 ONO.

Contact Sharon O'Day, 31 Stratheden Street, Kyogle, NSW, 2474. Phone: (066) 32 1262.

St Arnaud, 40 acres, 2-20 acre titles. Good sown down grazing land, well fenced. Three large dams. Suit irrigation, nut tree crops, etc. Four miles from town, phone but no power. Perfect for mudbricks. Price $25,000. We also have white and coloured fleeces for handspinning, $2.00 lb.

Mrs A. Dempster, PO Box 114, St Arnaud, Victoria, 3478. Phone: (054) 95 1554.

Queensland south, 250 acres for sale. Bushland; good timber, cypress, ironbark, silky oak, cedar. Red and brown soil, two dams, new cyclone-proof shed 20 ft x 25 ft concrete and steel construction with nine windows, can be converted into a dwelling. Secluded, 4 km to highway, 30 minutes drive to nearest village, school, etc. Price $49,000.

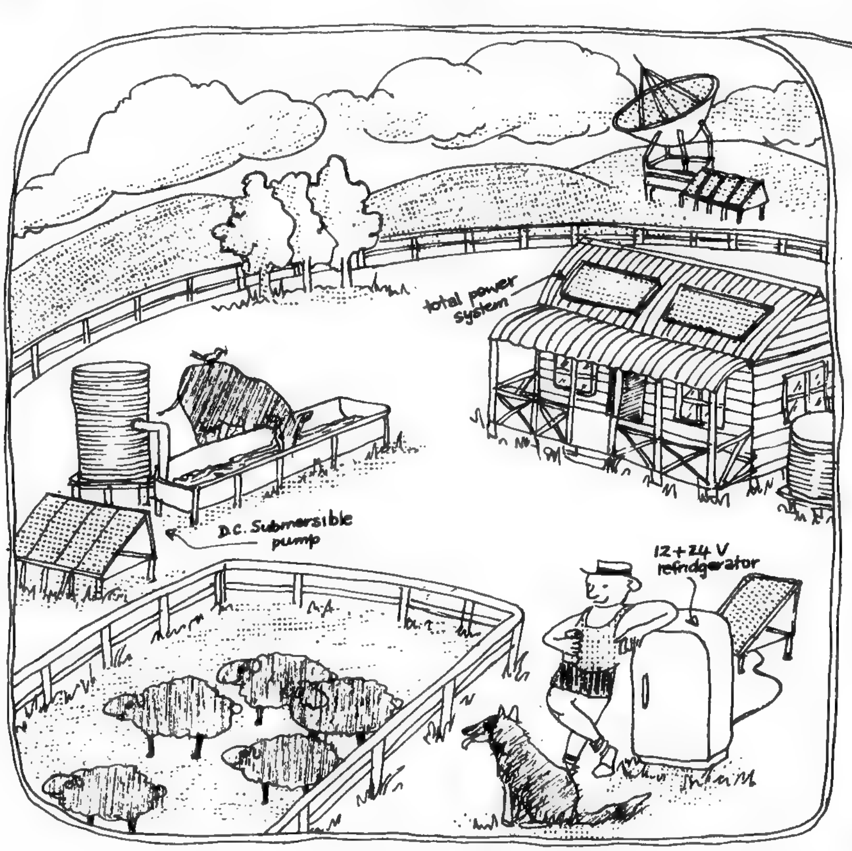
M. Chako, PO Box 922, Toowoomba, Qld, 4350. Phone: (076) 30 0438.

Share in 275 acres community, 140 km from Brisbane. Three-bedroom house on own hectare. Slow combustion stove, power, telephone, and septic, rainwater tanks and pumps, permanent creek. Lovely views in quiet valley, use of tractor and implements. School bus passes door. Price $36,000.

Malcolm & Kathy Roach, 49a Stephen Street, Toowoomba, Qld, 4350. Phone: (076) 32 3176.

Two lovely bush blocks, 100 acres +, high, views, river, small clearing, $39,500 and approx 35 acres, high, two tiny creeks, $19,500. OK to build, nuclear refuge midway between Sydney and Melbourne. Beaches, lakes, Nat. Parks nearby.

Ring Ms N. Adam, (047) 84 1020, or write C/- PO Leura, NSW, 2780.



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By David King

In 13 years in the Rainbow Region, half the gardens I've seen have been abandoned. The waste of effort, time and money is to me heart-breaking.

Why does this happen?

Too far from home, produce rots, you miss all those 'five minutes' in the garden that are so valuable.

Second are the holiday types, who come home to weeds in seed, and want to go again.

Third, the result of haste and rush, digging in all the couch runners etc. Need I say more?

Fourth, ambitions beyond belief, a huge orchard, garden and house are begun — the garden is weedy, trees stay in pots, rootbound and ruined . . . They want to sell out to a millionaire.

And fifth are those who forget to love and beautify, factory gardens lead the gardeners to go on strike.

To enjoy your gardening, I offer these tried and true suggestions. Please adapt to your region — mine is subtropical:

Start with a lawnmower, full-time rural residents perhaps should start with a self-propelled model. A rake is also needed.

Remove stones and sticks, after mowing spread blood and bone and cover.

Black plastic is best, but tin, cardboard, bituminous paper or lino can be cut.

Cover only after the ground is quite wet . . . Hold it down with cut green wood for future firewood.

About 10-15 square metres is a good size to begin. Future mowings will mean folding in the edge while you mow.

Rake up clippings not under cover and lightly spread over the plastic. Repeat this each time you mow, to stop sunlight ruining your plastic.

Leave for four months in summer, or even in winter. By then all the grass is dead and many surface weeds have germinated and been killed.

When the soil has consumed all the live plant material, tip the accumulated clippings off your cover.

Spread them on adjoining areas and re-lay your cover, overlapping the bare soil by 35 cm all around.

If your house is complete with walls on the side your garden is beginning, use most cover to come right up to the house.

At this point a plan is needed, perhaps part of your bare soil is to be a permanent edge.

If a fence is needed, start it and erect a temporary one for the non-edge parts.

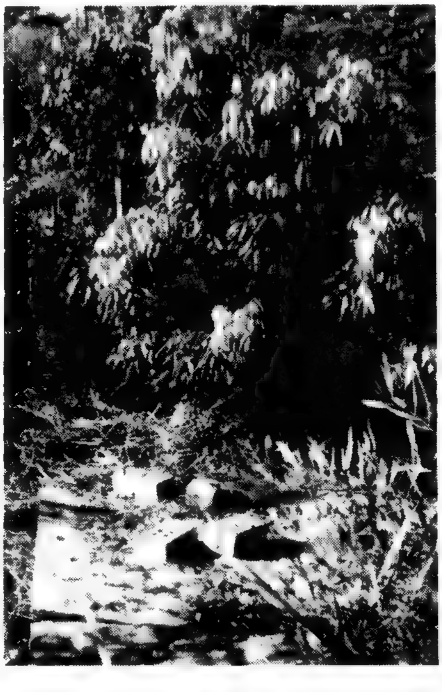
Also needed now: a fork, extra covering material, plants and seeds.

For a permanent edge with lawn, a trench should be dug and dense bedding species planted out on the edge of the ditch.

I use lemon grass and also comfrey in double rows. These materials should be obtainable free from friends.

Before planting drive the fork in full depth (wear boots for this job), work the handle back and forth and then withdraw the fork without turning the soil over.

Redrive the fork and repeat soil-loosening until the whole area has been aerated.



Four-year-old Lychee and old corrugated iron used as mulch.

If the area is to be permanent garden, dig out paths and put earth from paths on top of beds.

The edges of raised beds should be enclosed with timber, concrete blocks or bricks to prevent drying of the edges.

Plant herbs and vegetables.

If planting flowers, shrubs or trees, don't raise beds, rather broadcast. Sow a cover crop (do this before rain and rake in).

From September to February plant cowpeas *(Vigna sinsensis)* at about 50¢ a kg. Not a perennial but a good soil improver. By March, or after flowering, it can be pulled out and clovers planted.

White or red clover can be sown with rock phosphate dust in March/April/May (seed about $5 kg).

From June to August plant a mixture of buckwheat and *Lotus Major.* Lotus needs inoculation to grow vigorously.

A few words about powdered rocks. In the subtropics a good garden cannot be established without these.

Rock phosphate dust is 50% calcium and 50% phospate. Dolomite is 50% calcium and 50% magnesium. Gypsum is 50% calcium and 50% sulphur.

These should not be used at the same time as manures or both will be neutralised. The dusts are alkaline, manure acid.

When your permanent cover crops are established plant your trees and shrubs.

Fruit trees should be allowed room to mature, however while young cuttings of tamarillos (large) or seedling pawpaws can be planted between them.

Avocadoes, mangoes, lychees, macadamias, etc, should be planted at 20m spacings. Citrus, stone fruits, figs, etc, at 10m spacings.

Another useful interplanting strategy is to plant leguminous trees that can be pruned as mulch for fruit trees. As they are pruned they release nitrogen into the soil.

Some of these are flowering plants that can add greatly to your garden's beauty.

Examples from my region are:

A. podalyrifolia — Queensland silver wattle;
Bauhinia galpini — a shrub with brick-red flowers all summer;
Bauhinia blakeana — purple flowers all winter;
Calliandra alba — white perfumed pin-

Grape vine trellis covering a path which leads to the shed.

cushioned flowers;
Cassia multijuga — flowers profusely, can be coppiced before seed forms.

For some tropical species an overstorey legume is desirable. I use *Schizlobium parahyba*, a fast-growing treefern-like tree. A citrus overstorey can be done with *Tipuana tipu*. Both these trees are only lightly foliaged.

If these ideas are followed your orchard will not need a windbreak because all plants shelter each other. For a quick 'fill in' between the above suggestions, I use pigeon pea (see **Earth Garden 47**).

A useful fertiliser, often overlooked for fruit trees, is granite dust which supplies potash. It can usually be obtained from Shire quarries. Use liberally.

Mulch for fruit trees should be bulky, including sticks and branches as well as leaf material. In your first few years wattle and casuarina branches can be cut in the local forest by the ute load. Lantana prunings are also good.

If you can afford them, *Sandvic* tree pruners (large) at about $50 are a wonderful tool.

Remember that mulch is inflammable. However, long-term mulch is not needed.

Train and shape your trees by tip pruning so that they develop a skirt that touches the ground.

Our traditional concept of tree shape has been created by allowing animals to graze underneath.

Trees when they attain this shape make best use of solar energy and are self-mulching. Inside it's a great cubby space.

Annual flowers such as marigolds and zinnias will self-sow as part of the understorey.

Bulbs such as saffron crocus, snowdrops and day lilies can be buried outside drip lines to come up in season.

Divisions of Shasta daisies, wild strawberry and *viola hederacia* (native violet) can also be put in.

The more beautiful your garden, the more time you will wish to spend in it. I strongly suggest that after planting, the main work is weeding.

The more densely planted the garden, the less weeds which can invade, however, never let your unwanted weeds flower. If a weed has flowered and is then pulled out, it can often still produce viable seeds. Grasses that come up in the garden should be pulled out and left on the lawns or composted.

I haven't dealt with compost, chook runs, fencing options, pest control, etc. Watch this space for further details . . .

Happy gardening.

Interplanting. Bowen mango (centre), zinnias and marigolds. Foreground leaves are Pride of Bolivia *(Tipuana Tipu)*.

Potatoes

They are not known in the South parts of *England,* yet in the North parts they are planted in poor and rich mens Gardens, for the goodness that they yeeld to their tables in the winter when no other roots are to be had; in *Ireland* they are so generall and so common, that I never saw any man that had land and habitation there but that he had store of Potatoes for his use, and those which plant them for profit have twenty or thirty acres of them, more or less according to their abilities.

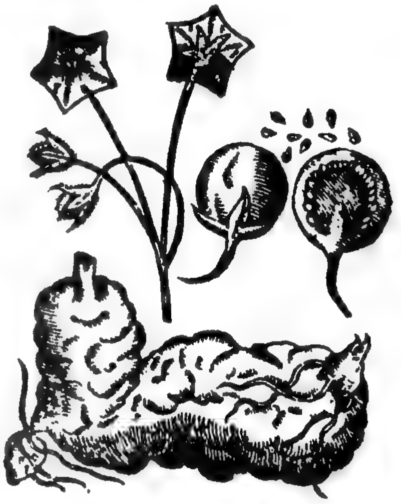
It were needless for me to set down the order of planting of them, seeing it is not generally to be put into practice, for I have not seen of them but in those places which I named, and it were vanity for me to give them directions.

STEPHEN BLAKE, *The Compleat Gardeners Practice,* 1664.

Some people when they are boiled have a sauce ready to put over them, made with butter, salt and pepper; others use gravy sauces, others ketchup, and some eat them boiled with only pepper and salt; some cut the large ones in slices and fry them with onions, others stew them with salt, pepper, ale and water. It is a common way also to boil them first, and then peel them, and lay them in the dripping-pan under the roasting meat. Another way, very much used in Wales, is to bake them with herrings, mixed with layers of pepper, vinegar, salt, sweet herbs and water. Also they cut mutton in slices, and lay them in a pan, and on them potatoes and spices, then another layer of all the same with half a pint of water; this they then stew, covering all with cloths round the Stew-pan, and account it excellent.

The Irish have several ways of eating them: the poorer sort eat them with salt only, after they are boiled; others with butter and salt, but most with milk and sugar. Also, when they can get a piece of pork, bacon or salt beef, they account it excellent with boiled potatoes.

ANON, *Adam's Luxury, and Eve's Cookery,* 1744.



The potato, from *Prodromus* by Gespard Bauhin *(Bauhinius),* Frankfurt, 1620. Bauhin gave the potato its botanical name, *Solanum tuberosum.*

Terrific tubers

An Incan digging potatoes using a taclla, from the Poma de Ayala Codex, Peru.

By Ron Haines

Millions of words have been written and spoken about the humble potato. The more I have read and heard, the more my interest in this vegetable has grown. Let me pass on a little more information to you.

It has been called "Murphy, Pratie, Spud, *Pomme de Terre* ('apple of the earth' in French)" and other exotic names. Botanically it is known as *Solanum tuberosum.* It is related to belladonnna and henbane and deadly nightshade, as well as eggplant, capsicum, tomatoes and tobacco. It was once suspected of being poisonous and a cause of leprosy.

There are 1,600 varieties of the terrific tuber at the present time. All shapes, sizes and colours are available: kidney shape, round, oval; red, white, yellow; smooth skin and rough skin.

Historically the potato reached Spain from Peru in the 16th century. Ireland received its first *praties* from the English colony in Virginia, North America, about 1585. England's first crops were sown in Lancashire in the 17th century. Sir Walter Raleigh, the famous adventurer (1552-1618), is believed to have introduced the potato to the British Isles after his colonisation of Virginia. In appreciation of his efforts he was executed by the Royalty he faithfully served.

The first potato crops did not do very well in the European climate. It was the 18th century before a high producing tuber was bred and the 19th century before it became the staple food of the poor. Potatoes were far cheaper than grain, which was heavily taxed. In the 1840s, the potato blight *(Phytophtora Infestans)* ruined the Irish crops, causing the Great Hunger in which thousands of Irish people starved to death under the noses of the English masters who denied them food aid.

Medicinally, the juice of a raw potato can be applied to sores, black eyes and bruises. Raw potato is a preventative for scurvy. Raw juice has been used internally for stomach ulcers, diarrhoea and diabetes. Grated raw potato can be used as a poultice to relieve sunburn, chilblains and cracked skin. Slices of raw potato are applied to the temples to soothe headaches. Some people carry a raw tuber in their pocket to ward off rheumatism.

If the potato was discovered today it would be hailed as a wonder food. Uninformed folk call it 'stodgy' or a 'slimmer's nightmare'. Not true. It is a low energy food, a good source of protein and an important supplier of vitamin C. All the essential amino acids are there, along with minerals vital to our good health.

Breaking down 100 grams of a potato baked in its jacket, we find the following nutritional content:

391 Joules	2.6g protein
21.2g carbohydrates	.1g fat
.6g fibre	65 mg phosphorus
9 mg calcium	.7 mg iron
4 mg sodium	503 mg potassium
23.5 mg magnesium	trace of vitamin A
.1 mg vitamin B1	.04 mg vitamin B2
1.7 mg vitamin B3	20 mg vitamin C

To benefit from nature's multi-vitamin capsule, the total package of skin and flesh has to be consumed.

In many parts of the world, the potato is a basic staple food. In the United Kingdom it is the main source of vitamin C. Most families serve the potato at least once a day. The main consumers are the Irish, English and the Russians. Its goodness speaks for itself as these countries have the healthiest people in the world. Many of the varieties of potatoes available bear names given to them in the UK, names like King Edward, Red King, Arran Pilot, Majestic, Pride of Dundee and Pride of Bute.

Most genetic experimentation on potatoes takes place at the Scottish Plant Breeding Station in Edinburgh.

Remember, potatoes are the cheapest and most versatile health food you can get. They are easy to grow and every Earth Gardener should be growing them and eating them every day.

DRUM SPUDS

By Shane Rowley

Growing potatoes in an old 44 gallon drum or rock cairn is a good idea for the garden or block where you haven't yet got started.

Start at the bottom with ashes, rocks and gravel for drainage to a depth of about 10 cm, then 20 cm of soil covering 'seed' potatoes.

When green heads are 15 to 20 cm above this level, add a second layer of soil, making sure 2.5 cm (1 inch) or so of the plant's leaves are clear of soil.

Once again the plant will grow clear of the soil. Repeat the process until the plant is clear of the top of the drum. Let the potatoes grow and mature in the normal way.

The size of the crop can be tested by scooping the soil to one side and covering it again.

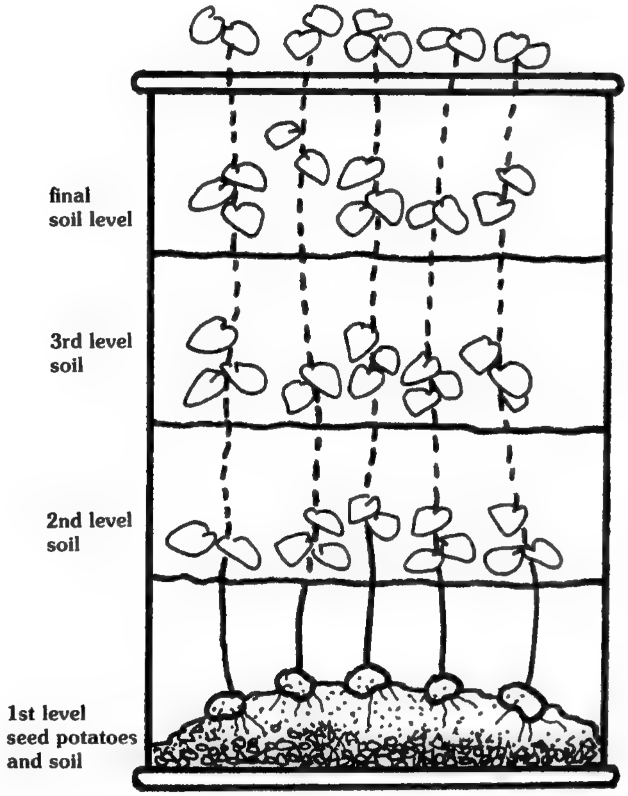
You can either pick those lovely new potatoes, or let the plant die back to harvest mature spuds.

Normal gardening rules apply for watering and feeding.

> Potatoes have prevailed in this little district, by means of premiums, within these twenty years only, and are much esteemed here now by the poor, who would scarce have ventured to tast them during the last reign.
>
> REV. GILBERT WHITE, *The Natural History of Selborne,* 1789.

Come buy my potatoes!
Hot potatoes — all hot!

Here's taters hot, my little chaps,
Now just lay out a copper,
I'm known up and down the Strand,
You'll not find any hotter.
Cries of London.



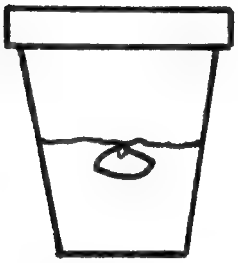
HOMEGROWN SPUDS

by Jacqueline French

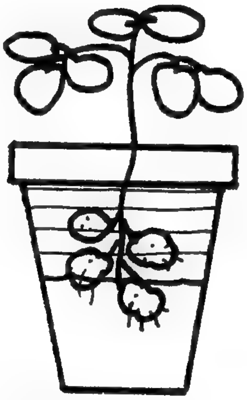
Most people include potatoes among their food staples, yet they're neglected in our vegetable gardens and even scoffed at. "They take up too much room," people say, "seed potatoes are too expensive", or "you can buy them cheaply enough." These claims are mostly made by those who don't know the glory of a good potato.

The spuds most Australians are used to eating are appalling. They are soft, greening around the edges, turn to pulp at the first drop of water and taste of nothing in particular. They're mostly short-maturing varieties too, like *Sebago.* And why not? Australian consumers will pay a few dollars extra for a good bottle of wine, a better cut of meat or choicer tea. But very few will pay another 20 cents a kilo for a better tasting potato.

Which means that if you are discerning you either have to find a decent supplier (there are a few) or *grow your own,* which can be attacked in a number of ways.



Cut potato with eye covered by soil.



Grown plant and potatoes.

The smallest scale. This is for the flat or terrace house dweller, or those whose gardens are planted with dahlias and azaleas. Take your potato, cut it into pieces with an 'eye' in each piece and pretend each section is a dahlia bulb. Forget it's a food plant at all. Stick the cut spud in a flower pot about halfway up and cover it with some potting mix, compost or decent soil. The larger the pot you use, of course, the more potatoes you will obtain, but even a window ledge container will yield a kilo or so of spuds.

As the potato grows, tuck more soil around it until the pot is full.

Potatoes were first grown in Europe in the 17th century for their flowers, so we shouldn't judge the beauty of the plant by its root (daffodil bulbs aren't exactly charming either). Slip your tubers in around the garden bed, in amongst the roses or the chrysanthemums. The average suburban garden could probably take a sack or more.

A potato 'bed'. The next suggestion comes from *Esther Deans' Gardening Book* (Harper & Row). Take an old bed or double bunk, minus mattress. Cover the springs with sandwiches of lucerne hay, top with a little compost or soil, lay down your cut potatoes, cover the hay and keep topping up as they grow. when you harvest the crop, you can remake the bed and plant it again, or even move the whole caboodle with you in the furniture van if you're shifting house in mid growing season. This method also entails less bending for the old or arthritic.

No-dig. When I was growing vegetables just for ourselves, I always used a variant of the no-dig method. Stick down newspapers on the grass, cover them with 6 inches of stable tailing, lay the cut spuds on that and shovel on another 4 inches or so, topping it up in mid-season. It was very quick and grew good healthy potatoes, though they did need more water as stable tailings don't retain moisture well. There was no need to dig them up — one good tug at the dying main stem and the whole plant came with it.

There was one other disadvantage to this method, the snakes loved it! I suppose as a lighter material, it heated up easily for their comfort, or maybe it was the texture they liked. Either way, the snakes much preferred the no-dig beds to the forked-over areas.

Garbage tin or drum spuds. I also tried garbage tin spuds one year. We had a few old 5 gallon drums with rusty bottoms (good drainage). I dumped all the kitchen waste into these, topped them off with an inch of soil and poked in a cut potato. The waste gradually subsided as it rotted quite quickly because the sun kept the drums hot. I added more soil and grass clipping, so the drums were always full.

The results weren't quite what I'd hoped, no 5 gallon drums totally packed with spuds, but there was a more then respectable yield. I'd have repeated this method if we hadn't had chooks, who now eat all the garbage. It was a quick, easy way of producing compost as well as potatoes. I must emphasise the necessity for good drainage for anyone who tries this, as kitchen garbage usually has a lot of moisture in it. The whole thing can turn sour very easily if excess water can't get out at once or the waste is pushed in too firmly. Leave it loose, so there is plenty of air to start with.

Potato plots. Last year we put in two 1/4 acre plots of *Pontiac* and *Coliban* in conventionally ploughed ground. Well, the sheep ate them (see *Earth Garden 47*) about halfway through, though we did quite well selling them as 'new potatoes'. They were a bit late to get the best prices and digging them was a bother (our guests got bored with being handed a potato fork and terse instructions) and we never did get around to hilling them. At our level of production it isn't worthwhile investing in more machinery and secondhand tillers are scarce around here.

Tyre culture. This year we're trying something different. We're doing 1/2 an acre, but it should work as well on a smaller scale. Earlier this year we collected about 2,000 old tyres from a neighbour who used to weigh down his silage with them. They're easy to obtain, ask at any garage or tyre dealer. We've placed the tyres in three rows, two tyres high, and half-filled all the crevices this creates with compost or stable tailings. We then poked in the seed potatoes. As they grow, we'll pile on more stable tailings.

The result, we hope, will be less weeding, no digging, and earlier potatoes as the sun heats up the black rubber. The heat stored by the tyres should help decomposition and the amount of solid matter and water retention.

We had another reason for doing this. The land the tyres are on is an old orchard, totally worked out, with compacted soil and slightly sloping. I grew a cover crop of broad beans there last year for ploughing in. They grew about 4 inches high. Hopefully, at the end of the experiment, we'll not only have a good crop of spuds, but also revitalised soil, with no soil loss from ploughing and (if past experience is anything to go by) a vast horde of earthworms rampaging through the paddock.

I doubt we'll make any money by this exercise by the time petrol costs are added up or fetching tyres and mulch. But we should at least break even, have enough potatoes to feed ourselves and store for seed and a good crop to sell to people who appreciate a decent spud.

A few points about growing potatoes. Your crop is only as good as your seed potatoes, so it's worthwhile planting *certified stock*. Seed potatoes are egg-sized spuds, specially grown in 'clean' soil conditions and free from disease. If you're going to the trouble of ordering, try some new varieties. Old recipes always specified the type of potatoes for each dish, never knowing that today's cooks would just bring in whatever soggy specimen they found in bags at the grocer, while expecting the same variety of potato to mash, chip, roast or bake equally well.

The more you hill your potatoes, water and fertilise them, the more you'll get, though potatoes will grow even in the poorest conditions. My father-in-law swears by them as a 'breaking in' crop for a new lawn. Plough up your hard ground, stick in spuds, toss on a little mulch and by the time the crop is ready, the ground should be well prepared and dug over for the permanent lawn.

This is one crop that can be grown without good fences. Rabbits won't touch potatoes, nor will wombats, roos, wallabies or horses (though they may trample on them a bit). Most sheep won't either (except for our Romneys and Tukidales, unfortunately).

We did have one old goanna who thought seed potatoes might be eggs and carefully dug up each one, inspected it, rejected it and moved on to the next. We replanted the rejects — and even goannas learn in time.

Cooking. If I get onto this subject, it will be hard for me to get off. That's the lovely thing about homegrown potatoes: you'll eat more of them at the expense of other less nutritious or bought ones. I'll stop at these three choice recipes.

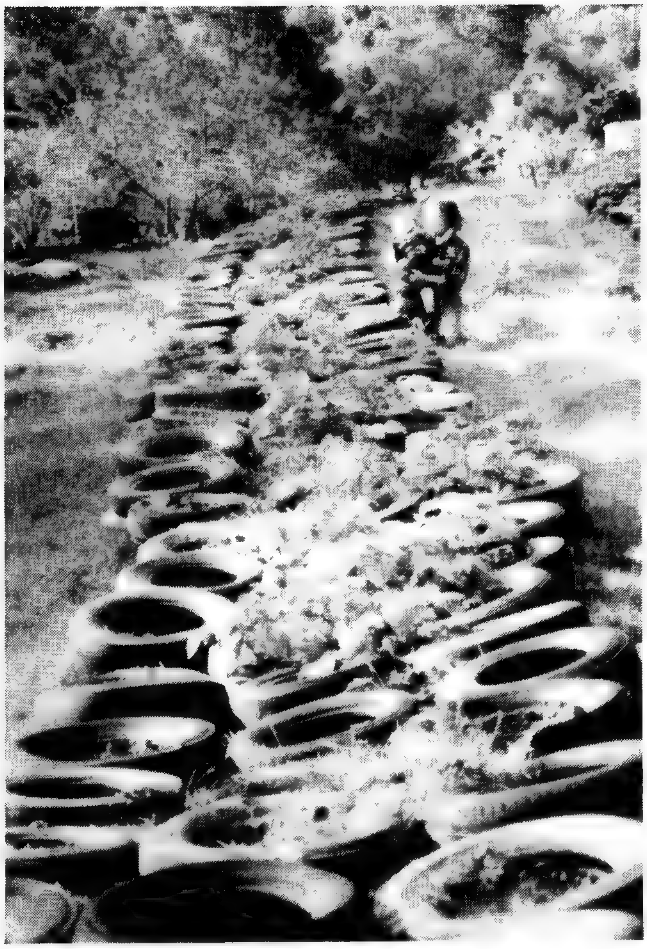
Potato cakes

1. Grate potatoes, spring onions and garlic to taste. Add an egg for each 2 cupsful and a tablespoon of flour. Mix well, fry, add salt and pepper to taste and whatever herbs are handy.

2. Mash spuds with lots of butter, add an egg for each cupful, plenty of parsley and some sauteed onion. Dip spoonfuls in boiling oil until they are puffed and brown and eat at once.

3. Mash spuds with plenty of butter. Add chopped spring onion and an egg to each cupful of mixture. Shape spoonfuls around a slice of cheese, roll in breadcrumbs and deepfry.

Add fish to any one of these and you've got *fishcakes!*



Tyre culture, Above: Jacqueline French with Edward and a row of potatoes growing in old tyres. Below: Potato crop in one of the tyres.

UNCLASSIFIEDS

EG unclassifieds is a market place for goods and services, publications, livestock and other topics which fit into the Earth Garden philosophy. We charge a flat rate of $12 (prepaid) for 50 words (maximum), plus name and address. Copy deadline EG51: July 10.

BIO-GARDEN grubber loosens and aerates the soil without changing its biological structure, encouraging micro-life. This rugged metal natural gardening tool penetrates and stays in the soil with little effort (no need for digging, hoeing or chopping). Price $10.00, including post and packing, from Harry Kurth, PO Box 561, Atherton, Queensland, 4883.

SPICES and hard to find Asian cooking ingredients are available at reasonable prices by mail order. Send a SAE for our price list of over 50 spices, dried condiments and spice mixes. We also offer a 'find a spice' service for any ingredients not in stock.

Queensland Spice Supplies, PO Box 13, Eagle Heights, Qld, 4271.

BODY BASICS hand-made soaps, Shampoo Bar, Body Bath and Massage Oils contain no animal products and no animal testing is performed. All are made to highest standards of quality using pure ingredients based on traditional natural recipes. Write/phone for information. Trade enquiries welcome.

Body Basics (Julie Jordan), 7 Shadforth Street, Paddington, 2021. Phone: (02) 33 5753.

FOR SALE, 24V, 450W Winco wind generator (as seen on page 27, Earth Garden 44), with tower, 50m cable, regulator, etc. Also winch and plans for 50 ft tower. Reason for sale, unsuitable winds/location. Only 20 months old. Working inspection invited. Price new $2,700; sell $1,750 ONO.

Chris & Rhonda Martin, Timor Road, Coonabarabran, NSW, 2357. Phone: (068) 42 2027 A/H.

FOLKWEAR patterns: for clothes which are beautiful, practical and comfortable. Patterns are from times past as well as from other countries. There are patterns for men, women and children. Send $2.00 in stamps with your name and address for your catalogue to Murr Made-Tinker Tailor, PO Box 39, Deakin, ACT, 2600.

COLUMN RADIATORS for hot water central heating. Sets of eight $350. Sizes: 600 mm height x 700 mm width, 600 mm height x 450 mm width, 600 mm height x 300 mm width. Including wall brackets and valves. Excellent condition.

Contact B. Tyler, Lot 5, Glenvale Road, Ringwood, Vic, 3134. Phone: (03) 876 4808.

HOW OFTEN do you wish you had clean, purified water to drink? And be able to use it outside too (camping, caravanning, etc). Here it is, the famous 'WATERBOY' water purifier. Once you have used it, you never want to miss it again. Made in West Germany. Price only $27.85.

Ludwig Siegert, PO Box 69, Maroochydore, Qld, 4558. Phone: (071) 43 4333/43 2125.

YOUNG WOMEN are invited for the third year to experience communal life on our rural property for one or two weeks during August 11-September 21. Opportunity for learning meditation, communication, gardening, crafts, etc. Share in daily jobs. Food and accommodation free.

Write to Sister Helen, Sisters of the Church (Anglican), House of Prayer, Dondingalong, via Kempsey, NSW, 2440. Phone: (065) 66 9244.

HOLIDAY in Warrumbungles. Isolated mudbrick cabins on established self-sufficiency type farm adjoining Warrumbungle National Park are available for rent. Surplus produce available including milk, vegetables, fruit and clean fleece for handspinning.

For brochure write to Robyn or Tony Marx at 'Tibuc', Coonabarabran, NSW, 2357, or phone: (068) 42 1740 after dark.

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TEENAGERS, puberty and diet; How to stop bedwetting; Rearing children on a vegetarian diet and lots more in HEALTH TODAY newsletter. Edited by Matthew Steele, author of the Warburton Programme. Six issues p.a. Send $9.00 to Health Today, Lindendale Road, Wollongbar, NSW, 2480.

STOVE, antique, wood-burning combustion stove, 6 ft long, central firebox, two huge ovens, circa 1860, the original stove from Grimwood House (Melbourne Grammar School). Fully restored, suit new stove buyer. Price $5,000.

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West Mail Order, PO Box A744, Sydney South, NSW, 2000.

BUSINESS for sale. Natural food grocery store, north-west Tasmania. Wide range of food, literature, cookware and self-sufficiency lines. Genuine opportunity for potential growth, catering to all corners of Tasmania. Large premises, friendly atmosphere, ideal location, very diversified and incorporates a craft shop. Price $35,000 + SAV.

Phone: (004) 25 4884, Leven River Traders, 37 King Edward Street, Ulverstone, Tasmania, 7315.

1986 AUSTRALIAN ACCESS DIRECTORY

Part 1

A guide to books, plans, groups, tools and techniques, and a bibliography for living a self-reliant life in Australia.

What it is. We think the time is right to begin compiling a truly *Australian* Access Directory which will continue in regular parts in each issue of Earth Garden. We could not have compiled a source directory like this when we began publishing in 1972. Now *(at last!)*, after 14 years, enough home-grown equivalents to books and groups in the field of self-reliance have sprung up to make it possible.

This Access Directory is based on new research plus the accumulated resources of all our previous editions (particularly the comprehensive Australian Access issues, EG22-3 and 25), updated to the time of going to press. The main subject sections will be: **Growing, Building, Water Supply, Energy, Home Base, Food, Community, Handcrafts, Environment and Livestock.**

Recommendations. Our task is to find, identify and evaluate the best 'information, tools' and methods for providing the essentials of life in Australia today. We have looked at each item and asked: Is it useful? Will it help us be more self-reliant? Will it harm the environment? Is the service, product, tool, publication or the object and activities of the group or club worthwhile? Is it appropriate? And, of course, is the price right?

Read and write. By the time the ink is dry on this page many of the listed sources will have changed in some way, most likely in prices and postal charges. You have at your disposal a device for gathering information. It is the stamped, self-addressed envelope (or SAE). Use it to write to the contact addresses given to find the current price of group membership, books, goods and catalogues. This is a token courtesy if you expect people (including us) to spend time and energy answering your letter. You can at least provide the stamp.

Feedback — yes please! We need your brief reviews of sources, books and products and suggestions for items you think should be included in this new Australian Access Directory. Please tell us what's missing, what's wrong, what's better, new addresses and prices, or other information which will help readers. Send it to Earth Garden, PO Box 378, Epping, 2121. We want to make this information as complete and accurate as possible.

— Keith & Irene.

BOOKS BY MAIL

This is a list of publishers and bookshops who will supply books by mail. They are likely to have in stock a wide range of books on self-reliance, farming, gardening, building, energy, handcrafts, livestock or New Age publications.

Aquarian Book Distributors Pty Ltd, 82 Sussex Street, Sydney, 2000.

Specialises in a wide range of vegetarian, nutritional, health, spiritual, occult and New Age titles. Previously Publishers Distributors.

Australia and New Zealand Book Co Pty Ltd, PO Box 459, Brookvale, 2100.

Publishes original Australian and foreign works and distribute Rodale Press, Garden Way and other US publishers.

The Book Connection, 1 Sterling Street, Dubbo, 2830.

Probably the biggest and widest range of any books-by-mail service in Australia; especially good for do-it-yourself, craft, hobbies, health, cookery, environment, gardening and books for writers.

The Bookshelf, 116 Bridge Road, Richmond, 3121.

A catalogue of books on self-sufficiency, also a first rate separate catalogue of books about the Australian Aborigines.

Down to Earth Bookshop, 874 Hay Street, Perth, 6000 (also High & Queen Streets, Fremantle, 6160).

Catalogue of practical and New Age Books.

Earth Garden, PO Box 378, Epping, 2121.

We stock our own books (published by Nelson) for sale by post. These include HARD TIMES HANDBOOK, The Settler's Guide, The Illustrated Earth Garden Herbal and Energy Works!

The Fragrant Garden, Portsmouth Road, Erina, 2250.

A 40-page mail order catalogue (price $2.00) covers scores of books on herbs, cottage gardens and old fashioned roses. You can also buy 700 varieties of plants by mail (or from the mudbrick gallery).

Going Solar, 320 Victoria Street, North Melbourne, 3051.

Books often difficult to obtain, especially on energy, wind, solar, water, methane, alcohol and wood power. They have the hardware also. Catalogue 3 x stamps.

The New Age Bookshop, Shop 35, Fountain Plaza, Bendigo, 3550.

Books and cassette tapes on spiritual healing, donkeys, dogs, astrology, Edgar Cayce, herbs, etc.

Second Back Row Press, PO Box 43, Leura, 2780.

Original Australian and foreign books on alternative technology, self-sufficiency, the garden, food, health, self-help, crafts, gay and women's issues. Catalogue, 50 pages, $2.00.

Soil & Health Publications, Box 2605W, Melbourne, 3000.

Owned and operated by the Organic Farming & Gardening Society. Organic growing and natural health titles.

Technical Book & Magazine Co Pty Ltd, 289-299 Swanston Street, Melbourne, 3000.

Catalogue of books 'for people on the land'.

BOOKSHOPS

As well as the outlets listed in *Books by Mail,* there are many specialists in self-sufficiency topics. While Whole Earth Bookstore in Melbourne is likely to stock all books available, smaller shops such as Brays in Balmain and Lane Cove in Sydney are helpful and will order books for you. Browse around University bookshops and craft and health shops for books put out by small publishers.

Abbey's Specialist Bookshops, 66 King Street, Sydney.
Barker, Conlan & Ferrett, 10 Banks Street, West End.
Bray's Books, 268 Darling Street, Balmain and 43 Burns Bay Road, Lane Cove.
Birchalls, 118 Brisbane Street, Launceston.
Coddingtons, 100 Crown Street, Wollongong.
Ellison Hawker, 90 Liverpool Street, Hobart.
Energy Information Centre, Argyle Centre, 33 Playfair Street, The Rocks.
The Feminist Bookshop, 315 Balmain Road, Lilyfield.
Friends of the Earth Bookshop, 366 Smith Street, Collingwood.
Mumford's Bookshop, Auckland Street, Bega.
Gleebooks, 191 Glebe Point Road, Glebe.
New Awareness Bookshop, 1st floor, 302-304 Pacific Highway, Lindfield.
Noah's Ark, 96 Keen Street, Lismore.
Robinsons Bookshop, 7 Central Park, Frankston.
Rudolf Steiner Book Centre, 307 Sussex Street, Sydney.
T. S. Bookshop, 126-128 Russell Street, Melbourne.
Weaver's Workshop, 2 Parap Place, Darwin.
Whole Earth Bookstore, 81-83 Bourke Street, Melbourne.

WHOLEFOOD SOURCES

There are so many health food shops around Australia today that we could never hope to list them all. Health foods are big business, with one chain of over 100 shops being owned by a brewery. Many types of food that used to be in health shops can now be found at supermarkets, where they are usually cheaper.

Instead we are listing wholefood suppliers, where you may buy honey, wholefood grains and flour, dried fruit, nuts and pulses (peas and beans) in bulk quantities and those shops which we know stock organic fruit and vegetables.

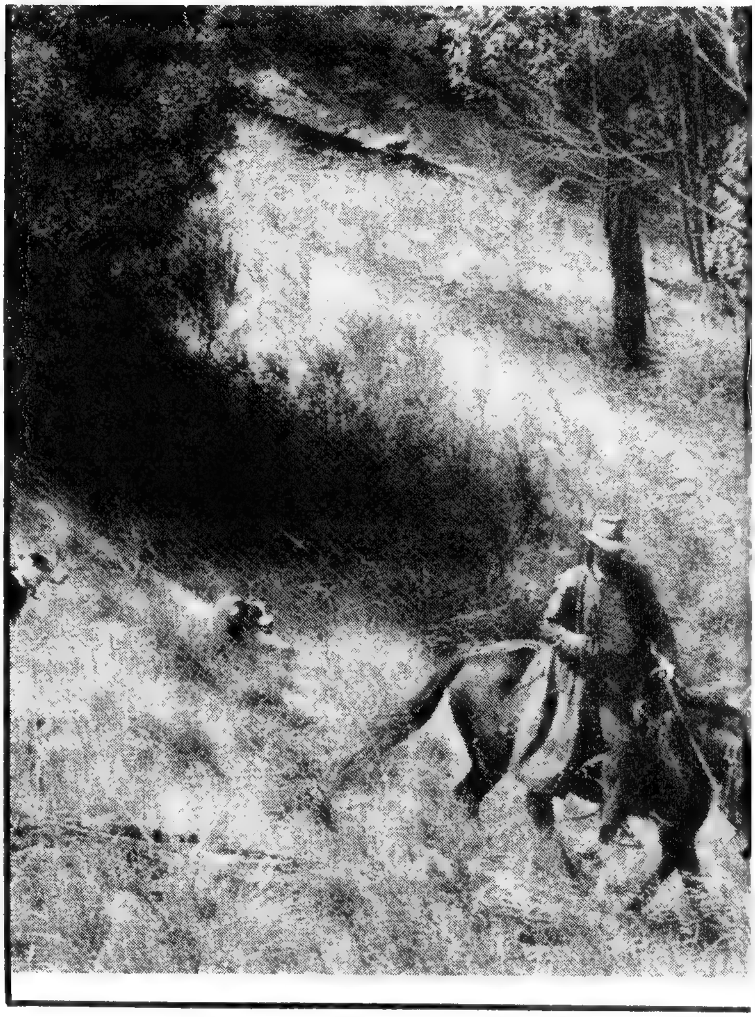
Wholefoods are unprocessed and untreated (unhusked, unbleached, unrefined). **Organic** produce must be grown without the use of artificial sprays or fertilisers.

WHOLEFOOD & ORGANIC SUPPLIES — NSW

Back to Basics Natural Food Store, 311 Princess Highway, Bulli.

Balmain Health Foods, 281 Darling Street, Balmain. Free range eggs, goat milk, seed.

Fundamental Food Store, 140 Keen Street, Lismore. Organic fruit & vegies, bulk herbs, tamari, tahini. Stonegrind your own flour from organic wheat.



Helios Enterprises, 414 Victoria Avenue, Chatswood. Demeter biodynamic products, bread.

Helmut's Heath Food Barn, 312 Darling Street, Balmain. Organic & biodynamic fruit and vegetable supermarket.

Kempsey Health Foods, Shop 4, Clyde Street, Kempsey. Bulk health foods.

Leura Health Foods, The Mall, Leura. Organic & Biodynamic fruit & vegies.

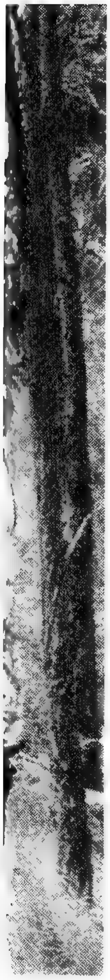
The Natural Grocer, 173 Botany Road, Waterloo 2017. Bulk and retail natural foods. Mail order price list from PO Box K59, Haymarket 2000.

Russell's Health Food Co Pty Ltd, 55 Glebe Point Road, Glebe 2037. Big range of bulk health foods. Country orders, send for price list. Also at 106 Bathurst Street, Sydney; 11 Oaks Avenue, Dee Why; 184 Liverpool Road, Enfield; Merrylands Road & Treves Street, Merrylands; 234 Victoria Avenue, Chatswood.

Searl's Health Foods, 74 Old Barrenjoey Road, Avalon Beach.

Sirius Natural Grocery Store, 313b Barrenjoey Road, Newport. Organic fruit & vegies, bulk herbs & spices, miso, cider, vinegar, chemical free cheese. Stoneground your own flour from organic wheat.

Univas Health Foods, 215 Darling Street, Balmain 2041. Bulk health foods. Herbs, spices, tofu, tempeh, soymilk, oils, pasta. Open Monday to Saturday. Country orders.



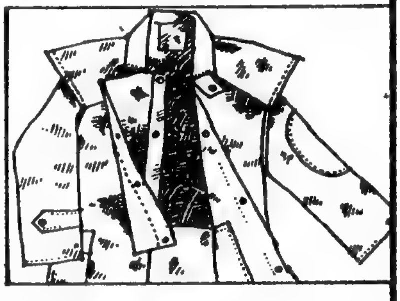
AUSTRALIANA

Stockmen's chic

Akubra hats, *Drizabone* and *Claybourn* oilskin raincoats with flaps, studs and pockets, moleskin trousers, leather belts and riding boots just like *The Man from Snowy River* wore in the film are suddenly in vogue. They have that rugged image Americans identify with Australia and which we Australians (80 per cent city dwellers) like to believe is a true one.

Despite being in fashion and fairly costly these garments are worth buying because they are well styled and *durable enough* to give several years wear. Moleskins, for example, are made from tough double weave cotton which lasts twice as long as denim jeans. The same might be said of *Longhorn* checked graziers shirts with two big pockets on the chest and sheepskin and leather coats and vests. These clothes are all made or sold by the famous R. M. Williams Pty Ltd established as 'Bushcraft Outfitters' in South Australia in 1934.

☐ **R. M. Williams Pty Ltd stores are in Adelaide, Melbourne, Brisbane, Toowoomba, Perth and Sydney. Mail order from 5 Percy Street, Prospect, 5082 (write for a catalogue).**



High Country riding coats, full and three-quarter length, made from heavy duty wax impregnated cotton.

☐ **Thomas Cook Boot and Clothing Co, 29 Mollison Street, Abbotsford 3067.**

VEGETARIAN RESTAURANTS — NSW

The Butternut Pumpkin, Shop 13, Fitzroy Arcade, Coffs Harbour. Wholefoods, quiches, vegie pies, salads, eat in or take away. Open 9 am — 4.30, Monday to Friday.

Double Dutch, 51 Union Street, South Lismore (by the river), open Wednesday to Sunday.

Earthly Eatery Restaurant, 14 Martin Place, Sydney.

The Fernery Vegetarian Restaurant, Crn Alexander & Burlington Streets, Crows Nest. Lunch, Wed-Friday; Dinner, Tue-Sunday. BYO.

Food for Thought, 5 Hunter Street, Sydney. Homemade wholemeal cakes, vegetarian sandwiches, juices.

Harvest Vegetarian Restaurant, 71 Evans Street, Balmain. BYO, non-smoking.

Havesome Wholesome Natural Foods Restaurant, 29 Victoria Avenue, Concord West.

The Healthy Human natural food store & cafe, 5/114 Cabramatta Road, Cremorne. Lunch, Tue-Sat, 11.30am-4.30pm, dinner, Thurs-Sat, 6.30pm-9.30pm.

The Hot Potato, 156 Broadway, Sydney (opposite Grace Bros). Vegetarian, sit down or take away, 6am to 4pm.

It's Only Natural Cafe, 214 Victoria Street, Taree. Open 7 days, from breakfast till late.

Lentil as Anything, 38 Pittwater Road, Manly. Wed-Sunday from 6pm BYO.

Munchies, vegetarian take-away, 6 Joseph Street, Byron Bay.

Sennin vegetarian restaurant, 288 Oxford Street, Woollahra. Creative vegetarian cookery since 1969. Monday to Saturday from 6pm.

Squirrels on the Park, 685 Dowling Street, Moore Park. Dinner, 7 days, BYO & licensed.

Suppertime Blues, Jonson Street, Byron Bay, vegetarian restaurant & takeaway.

Whole Meal Restaurant, Angel Arcade, Sydney.

WHOLEFOODS & ORGANIC SUPPLIES — WA

Ceres Wholefoods, 7-9 South Terrace, Fremantle. Bulk organic and macrobiotic foods.

Genesis Natural Foods, 1d Violet Grove, Shenton Park. Bulk health foods, stone grinders etc.

Nature's Tucker, 336 Albany Highway, Victoria Park. Bulk supplies, country orders.

Scarborough Wholefoods, 66 Scarborough Road, Scarborough. Bulk health foods, macriobitoic, homemade bread.

Sun & Plough Wholefoods, 18 Bannister Street, Fremantle. Organic vegies, eggs, stoneground flour.

VEGETARIAN RESTAURANTS — WA

Cockatoo Island Cafe, Murray Mews, Perth. Courtyard dining and takeaway.

Cranks, 285 Murray Street, Perth. Juices, sandwiches, Hunza pie.

Le Veg, 237 Albany Highway, Victoria Park. Vegetarian & seafood, dine on patio, dinner Tuesday to Saturday.

Magic Apple, 52 South Terrace, Fremantle (near Fremantle Markets), open 7 days, BYO, also Marine Pde & Napier Street, Cottesloe, 7 days BYO. Also 138 Lower Barrack Street, Perth. Vegan, vegetarian, wholefoods, 40 item menu, eat in or take-away.

Niggles, 104 Wray Avenue, Fremantle. Vegan & vegetarian, Wed-Saturday, dinner from 6 pm.

Sun Trolley, 23 Stirling Street, Perth. Vegetarian & seafood, BYO, lunch Mon-Wed-Fri, dinner Mon-Wed-Friday to Sunday.

HOT DRUM NEWS

☐ **Free from Hot Drum, PO Box 3, Maleny, Qld, 4552.**

If you're feeling cold and you are confused by the dozens of pot-belly and other kinds of wood heating stoves now on the market in Australia, a Hot Drum might be just the thing to warm your heart. They are made by recycling a 44 gallon drum, using a kit costing less than $100. Parts include an airtight door, air control, flue collar and legs.

Hot Drum News, a broadsheet produced by John Gilpin on his Apple Macintosh, has all the details you'll ever want to know about Hot Drums, including how to assemble them, install them in fireplace openings, or add a cooking top or hot water pipes.

ACCESS TO PEACE GROUPS

Alice Springs Peace Group, PO Box 1637, Alice Springs 5750.

Canberra Peacemakers, GPO Box 1875, Canberra 1601.

Campaign for International Cooperation and Disarmament, Floor 4, 252 Swanston Street, Melbourne 3000.

Newcastle Peace Forum, PO Box 5220D, Newcastle West 2302.

United Nations Association of Australia, 147A King Street, Sydney 2000.

Victorian Association for Peace Studies (VAPS), 124 Napier Street, Fitzroy 3065. Newsletter, monthly meetings.

Women for Survival, PO Box 163, Clifton Hill 3068.

Women's International League for Peace and Freedom, PO Box 46, Hawksburn 3142.

International Year of Peace

The IYP Secretariat is charged with administration of the Department of Foreign Affairs scheme for the International Year of Peace in 1986, funding and encouraging groups and events. The director is Mrs. Stella Cornelius. Information from IYP Secretariat, PO Box 1016, Chatswood 2067.

People for Peace

People for Peace (Adelaide), 310 Angas Street, Adelaide 5000.

People for Peace (Lismore), 1/123 Keen Street, Lismore 2480.

Tablelands People for Peace, 7C Herberton Road, Atherton 4883.

ANTI-NUCLEAR MOVEMENT

Anti-Uranium Coalition, C/- 285 Little Lonsdale Street, Melbourne 3000.

Canberra Programme for Peace Committee, PO Box 1562, Canberra City 2601.

FOE Uranium Collective, 366 Smith Street, Collingwood 3066.

Nambucca Anti-Nuclear Association, C/- PO Taylors Arm 2447.

Nuclear Disarmament, PO Box K485, Haymarket 2000.

Roxby Action Group, 291 Morphett Street, Adelaide 5000.

Scientists Against Nuclear Arms, PO Box 370, Lane Cove 2066.

Women's Action for Nuclear Disarmament, 57A High Street, Fremantle 6160.

Campaign Against Nuclear Energy (CANE)

CANE (Qld), PO Box 238, North Quay 4000.

CANE (SA), 291 Morphett Street, Adelaide 5000.

CANE (WA), 794 Hay Street, Perth 6000.

Movement Against Uranium Mining (MAUM)

MAUM (ACT), PO Box 1875, Canberra City 2601.

MAUM (NSW), PO Box K133, Haymarket 2000 (2/787 George Street).

MAUM (Victoria), 285 Little Lonsdale Street, Melbourne 3000.

People for Nuclear Disarmament (PND)

PND (Hobart), 102 Bathurst Street, Hobart 7000.

PND (Victoria), Room 5C, 252 Swanston Street, Melbourne; PO Box 132, Carlton 3053.

PND (NSW), PO Box A243, Sydney South 2000; Floor 7, 245 Castlereagh Street, Sydney.

PND (Newcastle), PO Box 5084A, Newcastle West 2302.

PND (Launceston), 34 Paterson Street, Launceston 7259.

PND (WA), 306 Murray Street, Perth 6000.

ITP books

Books from Intermediate Technology Publications (ITP)

Distributed in Australia by Second Back Row Press Pty. Ltd., PO Box 43, Leura 2781.

☐ Add $2.00 for postage and packing for each book. SBRP 1985/86 Catalogue $2.00.

Appropriate Technology (AT) is now recognised as the generic term for a wide range of technologies characterized by any one of several of the following features: low investment cost per work-place, low capital investment per unit of output, organizational simplicity, high adaptability to a particular social or cultural environment, sparing use of natural resources, low cost of final product or high potential for employment —The AT Reader.

The Intermediate Technology Development Group (ITDG) was founded in 1965 by the late E.F. Schumacher, author of *Small is Beautiful.* The Group is a charity which helps to introduce intermediate or appropriate technologies for rural communities in developing or 'Third World' countries. Intermediate Technology Publications (ITP) is ITDG's publishing arm. ITDG also publishes the quarterly magazine *Appropriate Technology.*

Tools for Agriculture is a hefty 'buyer's guide' to a wide range of simple agricultural tools and equipment throughout the world. These progress through hand operated, animal drawn then motorised equipment. Rotary cultivators like the Chinese 'walking tractors' and solar pumps are also included.

Some 750 photos and drawings of the implements are keyed to an index of manufacturers. Included are high quality hand tools, spades, forks, rakes, hoes, ploughs, cultivators, seed drills, spreaders, hand and backpack sprayers, hand, foot, treadle and water driven pumps for lifting water, harvesters, threshers, sickles, scythes, reapers, maize shellers and a pedal winnower from India. A good place to shop for hard to find , low cost, low tech, labour saving and quality farm or garden tools, beekeeping and sheep handling, dairy, coffee and oil processing equipment. About 60 Australian and New Zealand companies are listed with the 1,200 manufacturers and suppliers from 70 countries.

The AT Reader is not a 'how to' book, but an anthology on the ways appropriate technology has been applied (or misapplied) in its transfer to the Third World. Though many of these ideas are merely 'new wine in old wineskins' they can sometimes be very inappropriate indeed ... though never as injurious as the overkill which results when huge quantities of money and advanced technology are dumped by rich countries as ' foreign aid.'

There is a strong, sane vein of self criticism running through the varied extracts from journals and newsletters, much serious assessment of all levels of technology, the usual agonising over definitions, lots of lessons on practicalities, occassional humour and plenty of good reading.

To be successful [bicycles] needed the invention, development and production of ball bearings, sprockets, roller chains, the freewheel and gear-changing *mechanisms. The pneumatic tyre required advances in the processing of rubber. Lightweight frames needed thin-walled drawn steel tubing ... If you think that bicycles are simple, try building one with the tools and materials in a blacksmith's forge.*

STEPHEN SMITH, New Scientist, 1982 , in The AT Reader.

TOOLS FOR AGRICULTURE

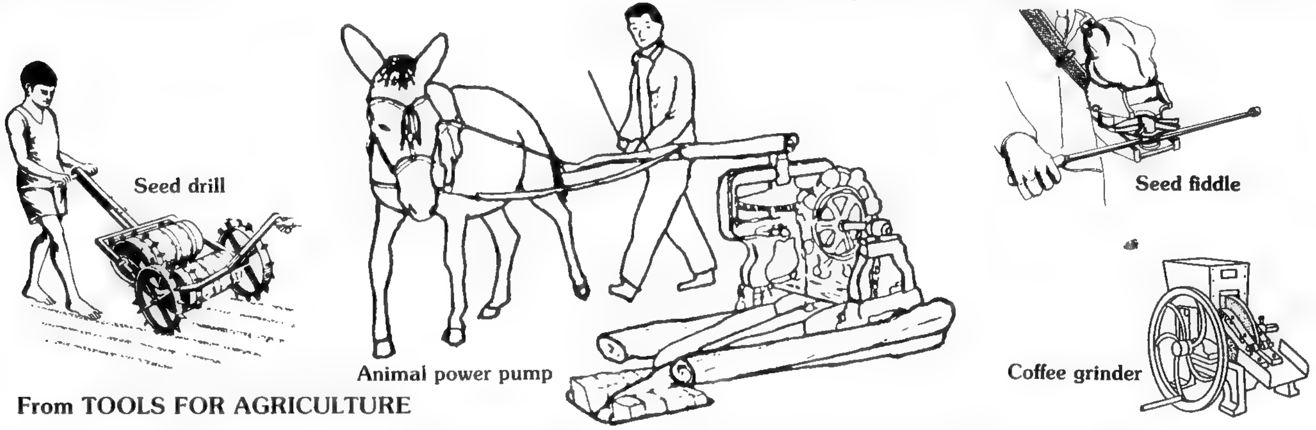
A buyer's guide to appropriate equipment

Introduction by Ian Carruthers, ITP in association with German Appropriate Technology Exchange, Third edition, London, 1985 (first published 1967), large format paperback, 264 pages, illustrated. ☐ $45.00.

The AT Reader

Theory and practice in Appropriate Technology

Marilyn Carr, ITP, London, 1985, paperback, 468 pages, illustrated. ☐ $27.50.



From TOOLS FOR AGRICULTURE

The remaining ITP titles listed here and briefly reviewed are thorough, *practical* works on appropriate technology projects such as water supply , sewage disposal, building a Cretan sail windpump and road making — all topics full of interest to anyone involved in self reliance. Where it is necessary, the authors explain technology in simple terms, while details of design, materials and construction are given in step-by-step sequence.

A HANDBOOK OF GRAVITY-FLOW WATER SYSTEMS

Thomas D. Jordan Jnr., ITP, London, 1984, typewritten text, 224 pages plus tables, illustrated. ☐ $14.95. How to survey, design and build gravity flow systems to bring drinking water to rural areas, based on experience in Nepal.

SOLAR WATER PUMPING

A Handbook

Jeff Kenna and Bill Gillett, ITP, London, 1985, large format paperback, 123 pages, illustrated. ☐ $35.00. Based on research and experiments, this book is thorough and right up to date. Now the standard work on photovoltaic pumps.

SEPTIC TANKS

and aqua-privies from Ferrocement

S.B. Watt, ITP, London, 1984, paperback, 98 pages, illustrated. ☐ $13.95. Build a low cost septic tank and learn ferrocement techniques along the way!

FIELD ENGINEERING

An introduction to development work and construction in rural areas

Compiled and edited by Peter Stern and others, from an original work by F. Longland, ITP, London, 1983, paperback, 251 pages, illustrated. ☐ $17.95. This surprising manual of simple engineering briefly covers the basics of building homes, roads, bridges, small dams, surveying, sanitation and water development.

EARTH ROADS

A Practical Guide to Earth Road Construction and Maintenance

Jack Hindson: revised by John Howe & Gordon Hathway, ITP, London, 1983, paperback, illustrated, 123 pages. ☐ $11.95. For non-engineers. How to survey, build and maintain durable roads of earth, based on experience in Zambia.

FOREST FARMING

Towards a solution to problems of world hunger and conservation

J. Sholto Douglas & Robert A de J. Hart, ITP London, 1985 (first published 1967), paperback, 207 pages, illustrated. ☐ $18.95. New edition of a classic work on trees for food, clothing, fuel and shelter.

HOW TO BUILD A 'CRETAN SAIL' WINDPUMP

for use in low-speed wind conditions

R.D. Mann, ITP, London, 1979, paperback, 79 pages, illustrated. ☐ $11.95. A canvas sailed windpump developed in Gambia and Ethiopia which may be built from the detailed and accurate plans included.

Other titles:

Land Clearance, Alternative techniques for removing trees & bushes,1981. ☐ $6.95.

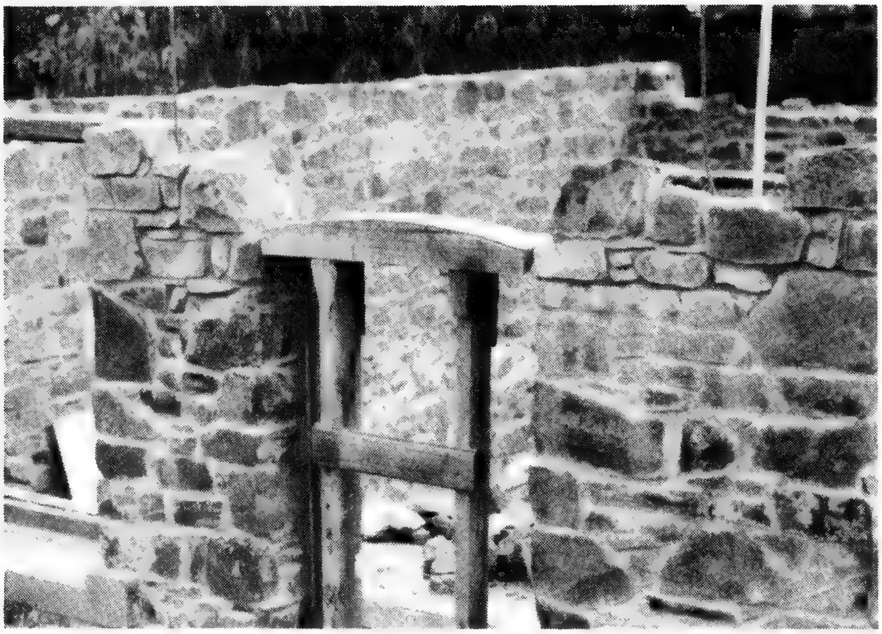
The Harnessing of Draught Animals, Ian Barwell, Michael Ayre,1983. ☐ $14.95.

How to make the most of your tractor, Introduced by Prof. Brian May, 1985. ☐ $18.00.

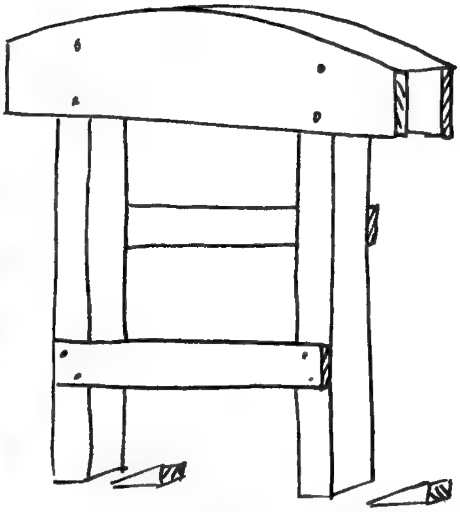
Small-scale gold mining (based on experience in Suriname), Dr.E.H. Dahlberg, 1984. ☐ $14.95.

Access Directory: EG51

Next issue we need your help to complete the listing of **Wholefood Sources** and **Vegetarian Restaurants** from the other States and include any we've missed in NSW or WA. We also hope to run Access updates for **Building and Energy** and would particularly like information to help owner builders, for example, on passive solar houses, earth builders, building equipment and materials and building courses. We'd like to hear from anyone who has experience building a kit home, or has any comments on them. Another item is **Country markets:** when and where are they? Over to you.



A. The form in position and the walls built up to support the arch.



Wedges raise the form so it may be removed easily.

STONE ARCHES

This is a sequel to Steve Lee's article Stone upon stone in Earth Garden No 27 in which he described how he built this beautiful bluestone barn at Queenscliff, Victoria. At that time Steve had not yet reached the top of an opening for a door or window. "The whole project has evolved during construction — solving problems as and when they arise", he said then. "I guess spanning the openings will be no different." We like the solution.

By Steve Lee

After three years of selecting, carting and laying over 50 tonnes of stone, the barn was at last completed.

Pitching the roof and fitting doors and windows was a relatively easy task and seemed to go ahead quickly. Handsplit shakes were chosen for the gable ends because they will weather to complement the ancient basalt.

The arches over the window and door openings were the most satisfying to build and give a solidity and unity to the walls not achieved by wood panelling or concrete lintels. No arch bar is used, but reinforcing rod was placed above the arch stones where convenient. This was not really necessary, but gave me some peace of mind.

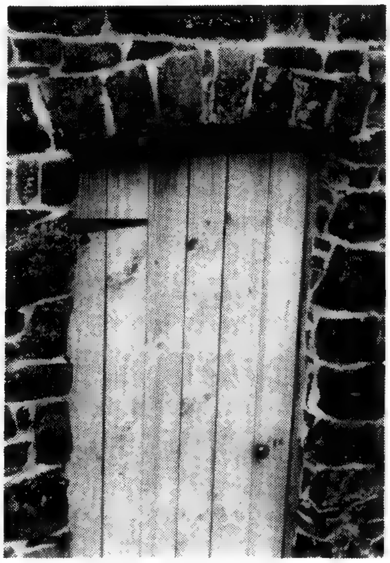
An arch exerts significant outward pressure, so the wall on each side should be built up and allowed to cure before commencing. To build the arch, a simple wooden form is required as a support to hold the stones in position while the mortar cures enough for the arch to support itself.

Great care should be taken in the choice of arch stones. Each stone needs to fit securely against its neighbours and for appearance it should have its two visible faces at about 90°. For fairly flat arches the building faces can be roughly parallel or slightly wider at the top. If a higher arch is required the stones need to taper on the radius of the arch.

Each stone selected was placed without mortar on the supporting form to check the fit. The arch stones don't go through the full width of the wall but are duplicated on the inside where they are supported by the window frame.

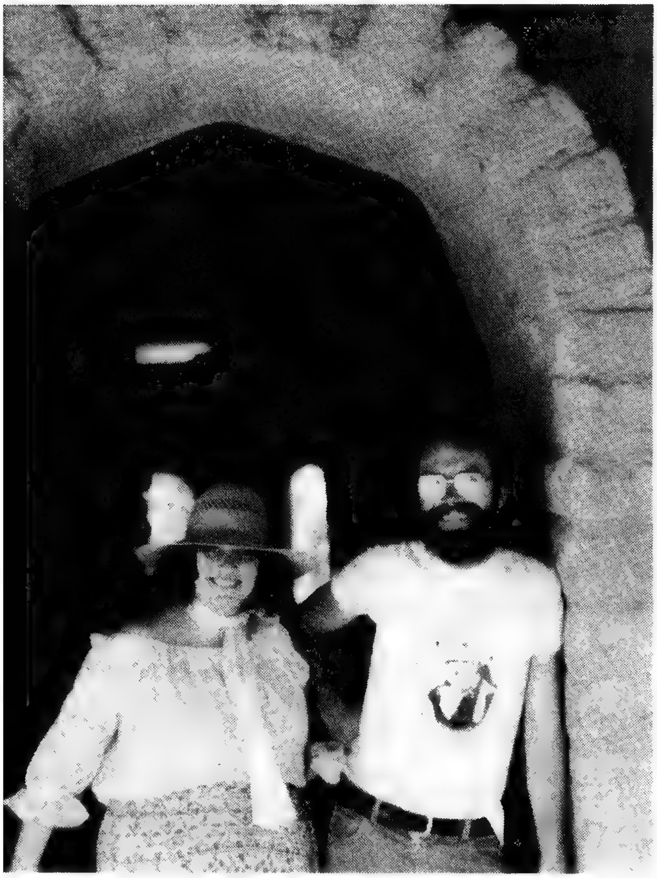
After the stones were mortared in place, a piece of reinforcing rod was bent to fit between them. The new stonework was then covered with damp bags for about a week to slowly cure the mortar. The wedges under the legs of the support form are carefully removed.

You still need to stand under the new arch to clean mortar from the stone face and point any gaps with fresh mortar. That's the litmus test of an arch builder and stonemason.



B. Arch stones are selected to fit firmly against each other.

Mudbrick arches



Jan and Michael Bailes under the first arch of their lovely mudbrick gallery at the Fragrant Garden herb nursery at Erina, NSW.

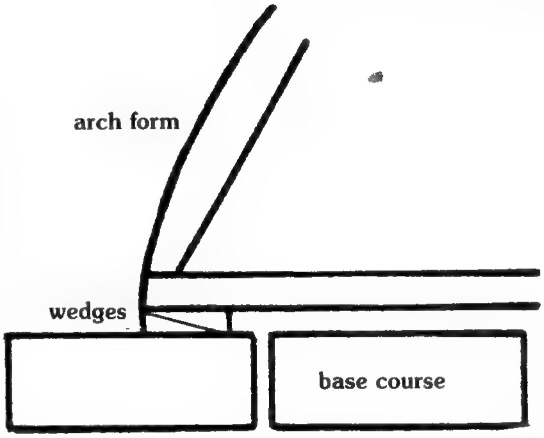
By Dr Robert Rich

Mudbricks are strong under compression. Therefore round windows, arches and similar features are possible. A strong wooden form is made to the right shape and thickness of the wall. This is stood on pairs of wedges, as shown in the illustrations. The wedges are knocked out to free the formwork when the arch is completed.

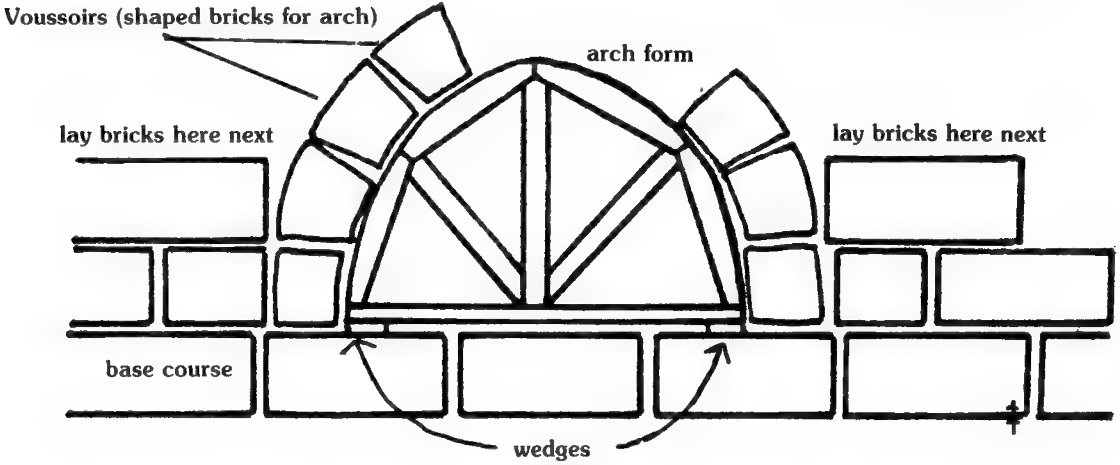
The wall each side of the arch should be built up to provide sideways support as the arch grows. There must be enough sideways support designed into the wall to stop the arch from spreading. In practice, a 900 mm radius arch should be at least a metre from the end of the wall or other point of weakness.

SETTING UP A MUDBRICK ARCH

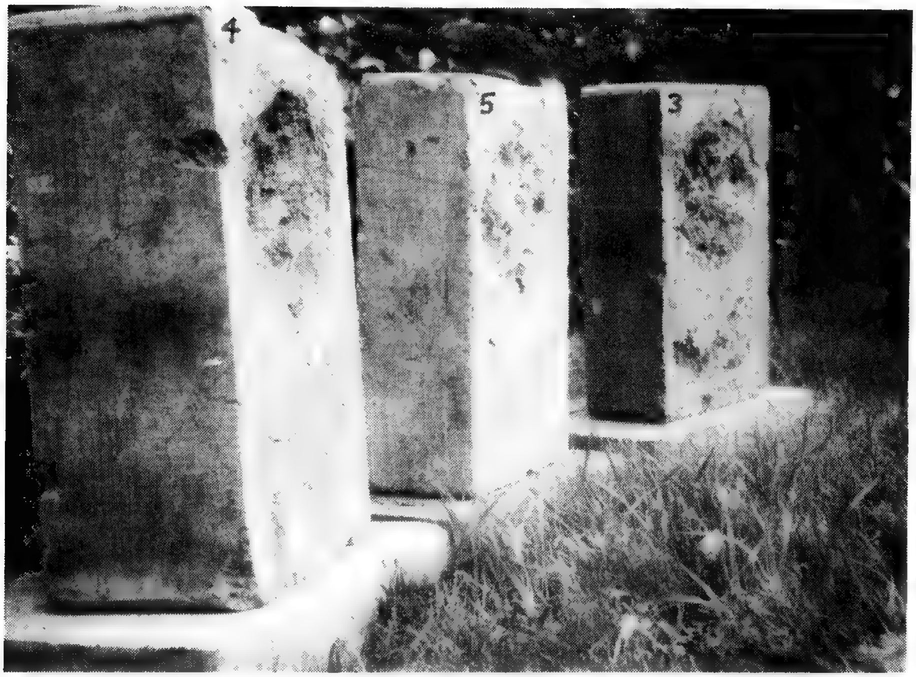
Cross-section showing wedges.



Arch under construction.



Enter Earthbricks



Machine pressed Earthbricks after testing. 3. Pymble clay, 4. Dural, subsoil, 5. Gosford earth.

"I may have devised a slightly new way of making mudbricks", Russell Head wrote to us recently. "Instead of the usual method of a sloppy mix with 25%-30% water and a foot to press it into the mould, it's quite possible to use 15% moisture (about the same as it exists underground) and a very, very heavy foot, weighing 25 tonnes!

"You've guessed it, a machine-made brick. But until now, nobody in the world has been able to have them stand up to erosion-type testing." Here, Russell tells us more about the new Earthbrick he is making and using to build earth houses in New South Wales.

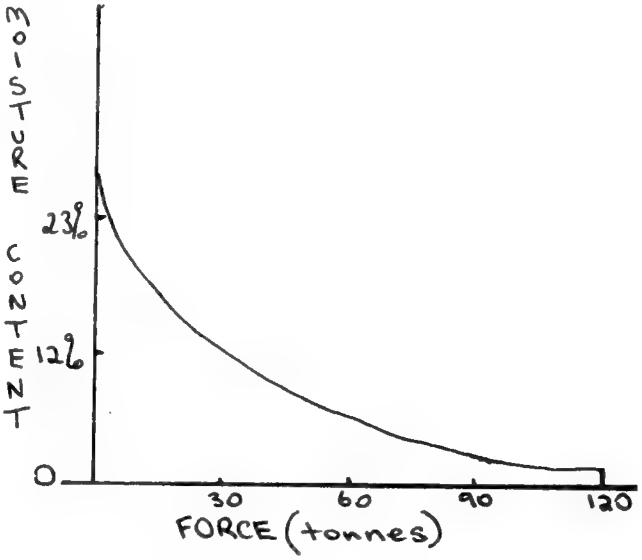
By Russell Head

Pressed earth brick machines have been around for some time. We made our first one four years ago for instance. With this method the moist earth is dug up from under the ground and pressed in a machine such as a Cinva Ram. You don't need to add extra water as you do for puddled mudbricks.

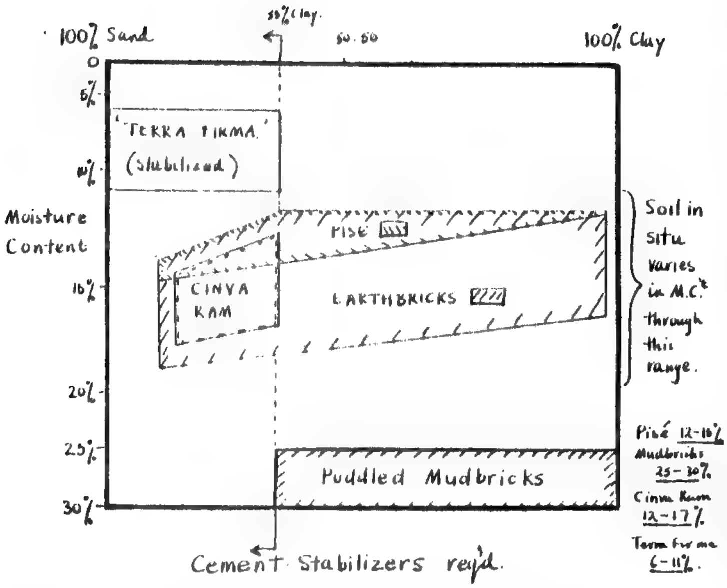
But until now these pressed bricks haven't been as good as puddled mudbricks, especially in their weatherability, that is they dissolved faster when blasted with water. In fact, I was told at the National Building Technology Centre (formerly the Experimental Building Station), where they do this sort of testing, that no unstabilised pressed earth bricks anywhere in the world have passed their accelerated erosion test.

In November 1985, I gave the NBTC five different bricks, pressed from a variety of clayey soils. "They'll fail", I was warned. The erosion rate considered acceptable for an unprotected external brick is 1.0 mm/min. The results: subjected to the accelerated erosion test, all five bricks ranged from 0.33-0.70 mm/min. This was the first time to their knowledge that an unstabilised pressed earth brick has passed the test.

So what's new? All we do is to use any soil that would make a good puddled mudbrick, i.e. about 40% or more clay. Instead of using water, substitute sufficient force to plasticise the clay component and achieve a dense, strong bond. The wetter the soil, the less force you need, viz:



The result is an earthbrick made by mixing the two major methods, mudbricks (adobe) and rammed earth (pisé). The bricks have the density and strength of rammed earth walls without the bulk shrinkage problem, plus the



weather repellent characteristics of adobe blocks. The raw material is dug up and used immediately. No water or straw is needed. The bricks are firm enough to be stacked away to dry as soon as they are made. Double handling is eliminated. Monitoring the moisture content of the soil and keeping it at a uniform level is the hardest part of the process.

What soils are suitable? The general rule is:

(1) There should be at least 40% clay (or you'll need some stabiliser).
(2) Soils with a good gradation of particle sizes make good bricks.
(3) No organic matter.
(4) The clay component must be of a non-expansive type.

This covers a lot of soils anyway, so we need further pointers:

(1) Any exposed bank or cutting nearby that has stood up to the weather without eroding is a good sign.
(2) Make a ball of clay in your hand and drop it. It shouldn't fragment when it hits hard ground.
(3) It shouldn't crack in half if left in the sun.
(4) Preferably it shouldn't be sticky, this often indicates a poor tensile strength.

The final decision requires you to make several different bricks and give them the erosion test. A hose running at them for ½ to 1 hour will often be enough to see which is the best.

Drying procedures. The bricks have to be stacked off the ground and covered to keep rain off them. As the water dries out of the brick the clay contracts, as any potter will tell you. Some bricks shrink ¼ in over 16 in, some shrink ¾ in. This is no problem provided the whole brick contracts at a constant rate. If the outside shrinks faster than the inside, cracks open up.

So, after they are made, the earthbricks must be stacked closely together and given a nice long time to dry slowly. Three weeks is the minimum and may do for a good sandy clay of low shrinkage. Three months might be needed for a wet clay with high shrinkage.

This drying time cannot be shortened and it is a mistake to use partially dry bricks. If you do, you will be left with fine shrinkage cracks around your mortar beds. It's much better to wait until the bricks have dried right out, at which point the moisture level will be below 1%.

The graph illustrates the range of good soil types and conditions that can be utilised in this process. It covers the natural moisture range in which earth is found . . . you only have to dig it up!

In conclusion, we would like to ask potential mudbrick builders for their assistance. We have perfected the machine and the process and started learning about the potential for earthbricks. Now we need different projects in different soils to expand our knowledge. China and the United States are vigorously researching earth utilisation techniques, because it is the cheapest walling medium. It is also an integral component of any passive solar building where its thermal mass soaks up the temperature fluctuations to provide a constant internal temperature.

For the next year **Earthbricks** will be building bricks at cost price for owner builders with projects that can help us expand our knowledge. Hopefully, owner builders will take advantage of this and help spread an appreciation of earthbricks at the same time. We can be contacted on (02) 44 2838.

EARTH BUILDING BOOKS
Back in print

Living in the Environment, Alistair Knox (first published 1975), paperback, 150 pages, illustrated. ☐$11.95.

Dirt Cheap: *the mud brick book,* John Archer, John & Gerry Archer (first published 1976), paperback, 90 pages, illustrated. ☐$12.95.

These two 'classics' of the Australian earth building revival are now back in print. They are published and distributed by Second Back Row Press, PO Box 43, Leura 2780. Add $1.00 postage per title.

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EXPO GOES NORTH

By Bob Young

Earth Garden readers may recall the exhibition **Architecture in Raw Earth,** which opened in Sydney in November 1983 (see Earth Garden 40 & 42). This unique, international mini-exhibition was based upon a major exposition at the Pompidou Centre, Paris, in 1981, which featured the traditional and modern use of earth as a world-wide building material, with technique including adobe and pisé.

The Australian mini-exhibition was conceived and created by the Earth Building Forum (now a defunct group) and was aimed at stimulating the wider use of raw earth in building in this country. Assisted with funds from the then Australia Council, the EBF added an Australian portfolio of projects, together with audio visual, books and related display material.

Following a highly successful 1983 season in Sydney (estimated 7,000-10,000 visitors), the mini-exhibition then visited Melbourne and toured five New South Wales regional centres during 1984, by arrangement with the Regional Galleries Association. This was followed by an extensive tour of Western Australia in 1985 and a short return visit to Victoria.

Each State added its own photographic collection of projects, which further heightened interest and increased the mini-exhibition's overall scope and capacity to appeal to a wider range of people.

In 1985, I was delighted to hear that the Queensland Arts Council had offered to organise a State-wide tour during 1986, using its large network of venues, including regional galleries and halls. Since examples of local Queensland work were in short supply, enquiries were made among Queensland contacts for someone to research and co-ordinate a portfolio of local projects for the proposed tour. This challenge was promptly taken up by Chris Nash in Brisbane, an experienced 'Muddie' of Stroud monastery fame. A small, additional grant from the Australia Council enabled Chris to proceed with this work and final arrangements were put in train for the Arts Council tour.

Inside Mark and Juliet Kalifo's pisé house at Maleny, Queensland. PHOTO: Chris Nash.

In September, I visited Rockhampton to present a paper on developments in earth wall architecture and to offer a preview of part of the exhibition at the Capricornia Institute of Advanced Education. This was a success with some 100 local people visiting the display.

Chris Nash worked steadily towards a 'launch' at the Mt Coot-tha Botanic Gardens pavilion in Brisbane in January 1986. From reports I have received, this major opening, featuring demonstrations and crafts and other activities, was a great success, with an estimated 1,000-2,000 visitors attending over two weekends. According to Chris, it also resulted in the formation of a local Earth Builders Society.

This year, the Arts Council, and particularly its energetic Outreach Officer Ms Len Davenport, has worked consistently on the tour programme. At this stage the itinerary includes some 12 centres, including areas such as Maleny, where earth building is already popular. These are the tour dates:

Exhibition Itinerary, 1986 Queensland Tour

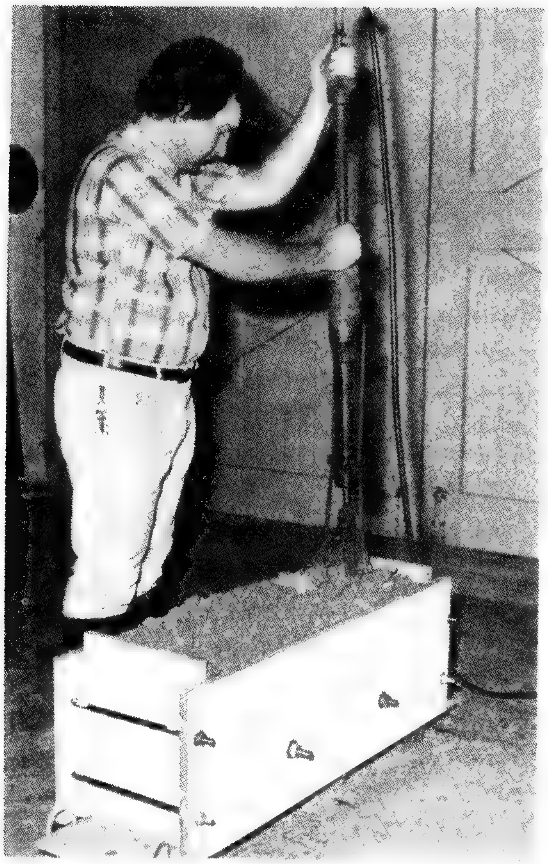
Dates	City/Town	Venue
7/4-12/4	Maleny	—
28/4-3/5	Emerald	Town Hall
12/5-17/5	Blackall	Commonwealth Bank
26/5-31/5	Longreach	Arts & Crafts Centre
30/6-5/7	Proserpine	Cane Growers Building
14/7-19/7	Bowen	Bowen Library
28/7-9/8	Townsville	City Library
18/8-23/8	Burdekin	Burdekin Theatre
1/9-13/9	Cairns	Municipal Library
22/9-27/9	Atherton	Library
20/10-25/10	Cloncurry	Shire Hall
3/11-22/11	Mt Isa	Civic Centre

For futher details regarding tour venues and dates, contact the Queensland Arts Council, Cnr Mary & Edward Streets, Brisbane, 4000. Phone: (07) 221 5900.

It is hoped that the tour will prove stimulating to Queenslanders and will appeal to the creative faculties of owner-builders, craftsmen and others. The exhibition features a range of styles appropriate to the diverse climatic conditions throughout Queensland.

Comment and feedback from exhibition visitors is appreciated. If any readers would be interested in taking responsibility for our programmes in South Australia, Tasmania and Northern Territory (where the exhibition has not yet toured), I would like to hear from you.

Bob Young, Architect, PO Box 12, North Ryde, NSW, 2113.



A rammed earth test specimen being compacted.

Soil tests

Increasingly, many building surveyors are requiring potential earth builders to have their soil evaluated by the National Building Technolgy Centre (formerly the Experimental Building Station) at North Ryde (Sydney) before a building permit will be approved.

Here is an outline of how owner builders may have samples of their soil tested for rammed earth (pisé), mudbricks (adobe), and Cinva Ram (pressed stabilised earth block) building.

Mudbricks. One block, representative of those being made, which is at least 28 days old, should be submitted. The person making the blocks can check that they have not cracked more than the allowable amount and that they can be handled without undue care.

Rammed earth. About 250 kg of soil must be submitted. The full evaluation procedure, as outlined, is then carried out. Whenever possible the client should be present while the specimen is being completed so that he or she can better appreciate the report when it is received.

Cinva Ram. Six blocks must be submitted.

Make sure you adequately identify the sample you submit and include the address to which the report should be sent.

The NBTC says the most common fault with mudbrick blocks submitted for testing is that they have been cast too dry. The soil must be so wet that it has ceased to be plastic and has become a heavy fluid. If the soil is too wet the block will slump when the mould is removed, so this is self-regulating.

Contact the National Building Technology Centre for further information and the price of soil evaluations.

The following evaluation procedures for the three main types of earth construction are set out in the NBTC's Bulletin No 5, **Earth-wall construction** (third edition), revised by L. M. Schneider (pages 12-13):

Pisé (rammed earth) construction

Compact a test specimen at least 800 mm long, 300 mm high and 300 mm thick with the compacting equipment to be used in the actual construction and with the soil at the optimum moisture content as described in Chapter 4.

Remove the mould immediately after completion of compaction and check that the soil shows no sign of crumbling. After drying for one month check that it has not developed any visible surface cracks. If it is not intended to cement render or otherwise protect the wall from erosion or abrasion, subject the test specimen to the accelerated erosion test described in Appendix A and ensure the it has an erosion rate not greater than 1.0 mm/min and that moisture has not penetrated to the other side of the specimen during the test.

Adobe construction

Check that the soil is capable of being moulded into adobe blocks which, after not more than 28 days of air drying, are capable of being handled without undue care and have not developed any cracks longer than 75 mm or wider than 3 mm.

For unprotected exterior walls, subject adobe blocks made from the soil to the accelerated erosion test described in Appendix A and ensure that they have an erosion rate not greater than 1.0 mm/min. Finally, observe that no moisture penetrates to the other side of the specimen during the erosion test, irrespective of the depth of the erosion. For interior walls and exterior walls that are to be protected, simply ensure that the soil can be cast into blocks that can be handled and do not crack excessively.

Cinva Ram construction

Check that the soil, when air-dry, is free-flowing and capable of being thoroughly mixed with the required proportion of cement. After moist-curing for seven days, test Cinva Ram blocks in accordance with Appendixes B and C of Australian Standard 1500-1974, Concrete Building Blocks, to ensure that they have a compressive strength of not less than 2 MPa.

Note: Our own Mudsmith, Dr Robert Rich, is concerned that the accelerated erosion test is being regarded as *the* test for mudbrick quality, arguing that a good test is to throw a mudbrick in the air. If it doesn't crumble or shatter on impact with the ground, then go ahead and use it in your building (see **Dropping a mudbrick** in **Earth Garden 39**).

EARTH BUILDING ACCESS

National Building Technology Centre

Delhi Road, North Ryde (Sydney), Box 30, PO, Chatswood, 2067. Phone: (02) 888 8888.

Formerly the Experimental Building Station, the NBTC is a part of the Federal Department of Housing and Construction. They will test mudbricks, Cinva Ram blocks and rammed earth samples for you and report on their strength. They also stock a series of useful bulletins, technical studies and leaflets titled *Notes on the Science of Building,* which deal with all aspects of building.

Write for a list of publications.

Earth-wall construction

Bulletin No 5, G. F. Middleton, revised L. M. Schneider (third edition), AGPS, Canberra, 1981, paperback, 88 pages, illustrated. From National Building Technology Centre, Box 30, PO, Chatswood, 2067. ☐ Price $6.20, plus postage 80¢ (NSW) and 90¢ (other States).

80 Self-Built homes!

More than 80 homes — mostly mudbrick — have now been completed by owner builders in Victoria under the Self Build Program set up in 1982 by the Victorian Government's Ministry of Housing.

A further 150 families in the scheme are building their homes 'on site', while around 50 more are 'in the pipeline' looking for land, or doing plans or costings before building.

The Self Build Program has expanded to include the Mildura and Geelong areas as well as Central Victoria and the outskirts of Melbourne.

To qualify under the scheme, prospective self builders must be over 18 years old, live in Victoria, earn a family income of no more than $350 a week and be able to make regular loan or mortgage repayments. Their family assets should not exceed $15,000.

In return for the financial support and technical assistance provided, self-builders undertake to bring their homes to lock-up stage after 12 months and completion within 18 months. They also must agree to live in the house for three years after it is built.

Victoria also has an Urban Homesteading Program in which 'owner-renovators' repair and rebuild older city and suburban homes bought by the Ministry in Melbourne, Geelong, Ballarat and Bendigo and receive a no deposit loan to buy the home when restoration is completed. More than 100 lucky Victorians are now taking part in this scheme.

Comment: We think it is a crying shame that this far-sighted initiative to encourage and help people to help themselves by building their own homes has not been adopted by other State Governments in Australia. It has proved to be a successful way to house people at low cost. If Victoria's scheme was accepted as a role model by other States, hundreds of Australian familes would very soon have their own homes — Irene & Keith.

☐ **Self Build/Urban Homesteading Programs.** For further information, contact the Special Purchase Branch, Ministry of Housing, at Myer House, 250 Elizabeth Street, Melbourne 3000.

MAIL PROBLEMS

Rene Schneeberger, author of **Chlorella culture** (EG49) and **The algae pond** (EG46) writes to inform us that he has again received many letters from readers, but many of these were in bundles with their envelopes removed, so that most letters did not contain a writer's address. Also, Rene is not sure whether some of the replies he has sent have reached their destination. If you have written and did not receive a reply, please write to Rene. His address is: YKS Compound, House 3, Anibong District, Tacloban City, Philippines.

FERROCEMENT TANK MK. 2

By John Vukovich

Our second ferrocement water tank was built to collect rainwater from the roof of Evan's hut (see **Earth Garden 49**). He had not wanted a tank incorporated into his hut as was the case with tank Mark 1 (see **EG48**), so this tank had to have its own roof. The decision on how to put a roof on this tank was shoved into the 'too hard for now' basket and we proceeded to build the tank base and wall as for tank Mk 1.

The tank's capacity was to be about 2,500 gallons so the diameter was reduced to about 2.7 metres (9 ft). Also, we had acquired a sheet of 1.6 mm thick flat steel, 2m x 1.1m, which we propped against the inside of the mesh wall when plastering from outside. This meant we did not need to have someone inside holding a small sheet of tin and the steel sheet also stiffened the mesh so that 1m high stages of plastering were no problem.

By the time the tank wall was plastered to within 250 mm of the top we had decided how we would attempt to roof it. This involved overhead plastering, which all the crew thought might need a real plasterer, but we bravely decided to give it a go.

Weldmesh was formed into a shallow cone and Brian, our helpful neighbour, welded up the joints for us. An opening was cut into the edge of the cone so the stepladder and plasterers could be removed after the roof was complete. The weldmesh cone was placed on top of the tank wall and wired to it. Hessian from cut-open bags was laid over the weldmesh cone and held down with one layer of 12 mm birdwire wired through the hessian onto the weldmesh. This birdwire was joined to the birdwire of the wall with wire ties and twitching.

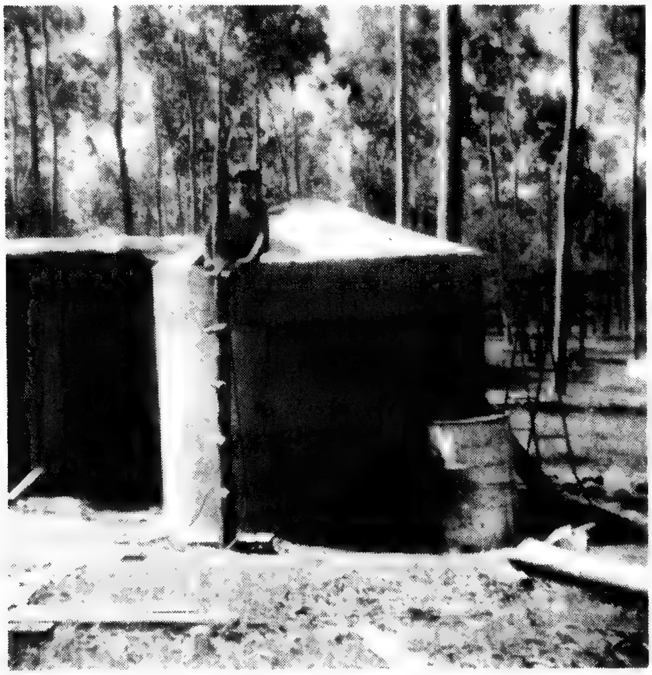
Rather than prop this flimsy roof structure so that it would support the weight of a plasterer, we decided to plaster it as far as we could reach from the tank side and hope that this would stiffen it enough to take the weight of a plasterer completing the centre of the roof.

The plaster was the usual 3:1 sand/cement mix with added flyash (15% of the cement volume in this case). The mix was made sloppier than usual because the hessian quickly soaked up moisture from the plaster, even when the hessian had been wetted down beforehand.

Standing on planks spanning 200 litre drums, we plastered the top side of the roof as far as we could reach to a thickness just sufficient to cover the birdwire. As soon as this plaster was reasonably cured under wet bags (two days), we plastered the underside of the ring which had been plastered.

At first, most of the plaster we trowelled on fell off, but after a while we got the knack of consecutively filling each 200 mm square of the weldmesh so that there was no steel showing. Wet bags could not be used to cure the underside plaster, so we splashed water up onto it several times a day for three days and kept the bags on top wet. We then found that the plastered part of the roof could be walked on with safety so we plastered the rest.

Top: Evan ties on an old quilt for damping down the plaster. Below: Evan in the almost completed Mk 2 ferrocement tank.



The roof proved to be surprisingly strong and is now used as the route onto the roof of Evan's hut when fallen leaves need to be swept off.

When the inside of the tank was cleaned out and the stepladder removed, the opening was covered with flywire which was stuck down with cement slurry.

Because of the unusually dry summer, the tank has only been ¼ full so it hasn't been fully tested but we are confident that it will be as successful as Mk 1. This type of roof could have potential as a cheap and strong roof for other structures. We are currently thinking about that.

NON-FERROCEMENT ROOFS

By John J. Alderson

John Vukovich's article **Ferrocement Roofs** (EG49) took my mind back to 1955 when we were growing roosters for the table and cheap poultry housing was a must. We put up ordinary chookshed-type buildings of round bush timber, the timbers being about 450 mm (18 inches) apart, the width of a wheat bag.

Old bags were opened lengthwise and tacked to these to make bag walls and roofs. A wash made of pure cement and water was then applied to the bagging which immediately shrank tight. Several more coats were applied to each side, and finally a wash of sand and cement. For the roof this was made like cream and poured on, then brushed or trowelled out to cover all the bagging. When set they were waterproof. No supports or other reinforcement were used.

I have considered, at least in theory, using this technique for cheap permanent roofing. I'll give the theory for anyone who wishes to try it.

A solid ceiling is prepared and the upper side of it covered with plastic sheeting. A layer of sawdust is put on top of this (mainly for insulation) and this can be shaped to the form you wish to make the roof. That is, lovely flowing curves are possible. The sawdust layer is covered with a layer of plastic sheeting, which makes certain that the sawdust keeps perfectly dry. A layer of hessian is placed on this and given a wash of cement and water. A layer of chickenwire is applied and then a thin layer of cement and sand, and finally one or two layers of pure cement and water should complete the job. A final coat of waterglass (quite cheap in 44 gallon drums) or some other sealer (always dear) should keep out the rain at Tully as well as Bourke. Gutterings should be moulded in as part of the roof.

A similar technique is now being used to make canoes which are lighter than fibreglass of the same dimension.

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Auchendarroch Community

Mt Barker, South Australia.

By Bill Carter

Nearly 10 years ago, on July 1, 1976, a group of people bought a famous property in the centre of Mt Barker, South Australia, known now from the original name of the house as Auchendarroch Community (a Gaelic name, thought to mean 'beautiful home').

In the early days there was no advice available for people starting a community, so the group formed a company to buy the property, now worth around $800,000. Of course, the company must make a loss (which isn't hard to do), or at best break even, so as not to pay tax.

The Community began with seven families who all built their own kitchens to make the units self contained (although there is no actual ownership of separate areas because there are no Strata titles, rather members have a share in the company). The original large homestead type kitchen remains available to the whole community, together with a ballroom, refectory, pantry, cellar and other rooms.

Each family pays a weekly running cost covering electricity, gas, hot water, rates and water rates, all insurance, maintenance, telephone rental and garden costs, including the gardener's wage. The grounds are delightful: five acres of garden tended full time by a foundation member of the community. The garden produces our own wine and beer and, of course, fresh vegetables and eggs. Families have come and gone and all have enjoyed the unique lifestyle for shorter or longer periods. Children and animals love the space and freedom.

Then there is the cooperative grocery store, a great boon for hungry people when the shops are shut; every family keeps an account book and pays monthly. Access to a home computer makes accounting easy and one of the families does this. There is a regular working bee day about once every month, to paint and care for the building (most of it is over 100 years old). The roof, very large in area (about an acre) is partly corrugated iron (fairly easy) and partly slate (not so easy). Upkeep on walls and windows is just hard work and as the cost of materials for maintenance is high, labour must be voluntary, but it is quite a lot of fun working together on the project and the profit of increasingly valuable real estate accrues to the community and its members (making a second mortgage feasible).

When do the families meet socially? To eat, fairly often. The Sunday barbecue is now a permanent institution, the fortnightly community tea is a must. Every evening there is a 'cuppa', plus games nights, the Annual Ball and Anniversary celebrations. A house meeting is a necessity every 4-6 weeks, but it is very informal and the annual general meeting of directors, ie everyone available, is held over the inevitable 'cuppa'.

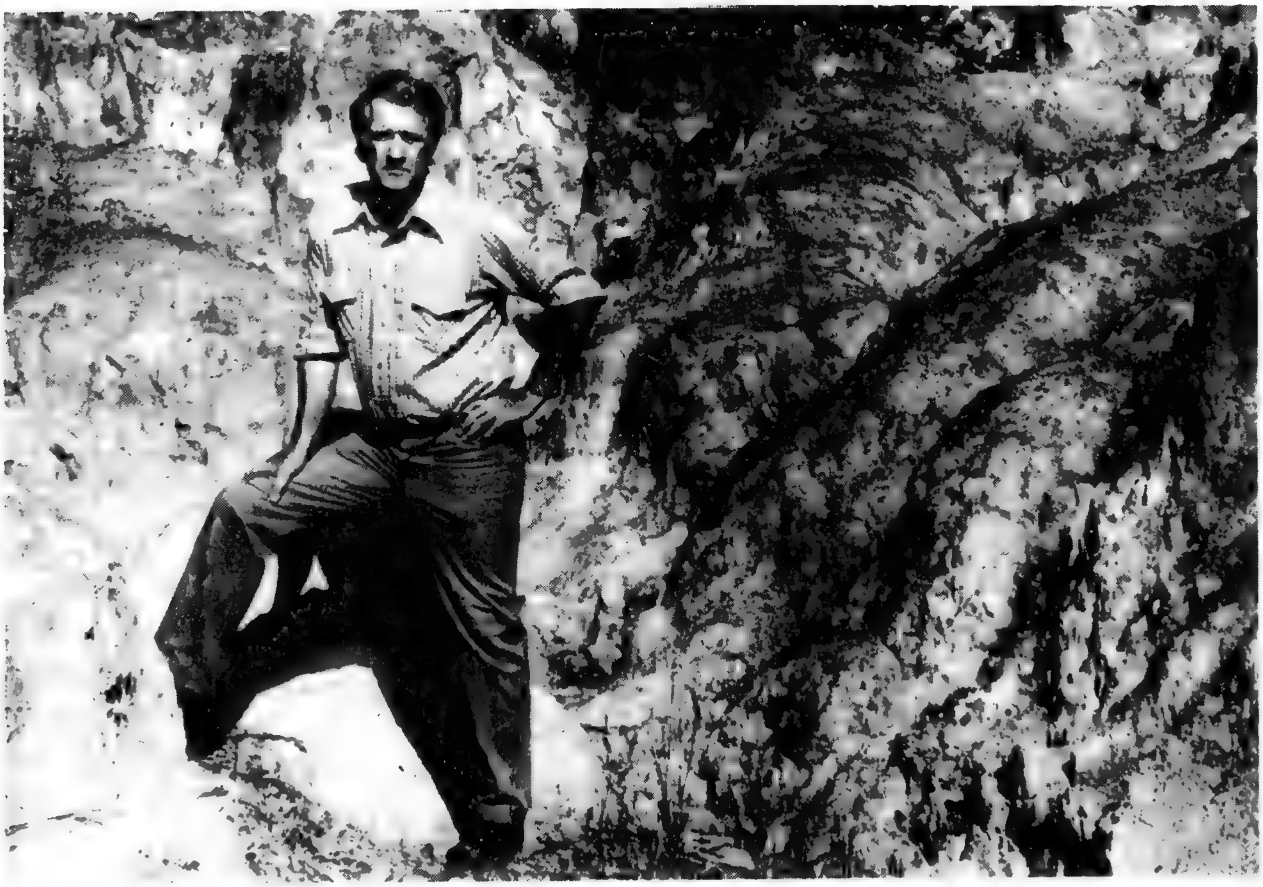
For anyone who believes in peace and who appreciates beauty in profusion, Auchendarroch is a happy place to live, with few rules or regulations, rather a spirit of co-operation which is, after all, what Community is all about.

Bill Carter, Auchendarroch Community, Adelaide Road, Mt Barker, SA 5251.

PERMACROFT CO-OP

The Permacroft Co-operative has undergone some significant changes of plan since the story **Town Edge Community** in Earth Garden 46. The co-op is no longer running the Victorian Tree Crops Nursery and is now looking for land in the Euroa, Strathbogie and Violet Town areas and not Daylesford. For further information, send SAE to Daryl Sipos, 237 Union Street, West Brunswick, 3055.

Who will speak for the land?



Dr Brian Roberts, Dean of Applied Science at Darling Downs Institute of Advanced Education, Toowoomba since 1976, is a specialist in land use planning and mangement. Land ethics was originally given as a paper at the Soil Degredation Conference at the Australian Academy of Science, ANU, Canberra, in November 1984.

LAND ETHICS

A necessary addition to Australian values

By Dr. Brian Roberts

Man is still of the earth, earthy. The earth is literally our mother, not only because we depend on her for nurture and shelter but even more because the human species has been shaped by her in the womb of evolution. Each person, furthermore, is conditioned by the stimuli he receives from nature during his own existence.

RENE DUBOS, A God Within, 1973.

Introduction.

The Australian National University invited the author to develop a discussion paper on the broad implications of land degradation for Australia. In my struggle for a solution to the erosion problem over 30 years I repeatedly return to attitudes to the land, as the fundamental issue in need of change. The conviction that the key issue which ordinary Australians should appreciate is the basic Man/Land relationship, has led to this overview concentrating not on the hard data of soil losses in terms of their production or socio-economic implications, but on the deeper values we place on land as our national foundation. When presenting a stark analysis of the ecological realities which face Australia today, it is predictable that one will be accused of emotionalism or even alarmist scare tactics. It is my firm belief that we need to reconsider the factual basis of our apparently apathetic optimism and recognise the significance of the realities which confront our rural development.

A useful starting point is Bolton's *Spoils and Spoilers* which reminds us of agricultural developments and their attendant attitudes at the turn of the century:

"In the dozen years before 1900 every government in Australia set up a Department of Agriculture which included among its functions the spread of information about sound farming practices. By that time, starting with South Australia's Roseworthy in 1882, agricultural colleges were established in four of the six Australian colonies. Although the staff of these colleges confronted the scepticism of the practical farmer for the mere scientist, their findings were often given widespread publicity through respected and influential journals such as the Leader, Register, Queenslander and Western Mail; but their total influence is hard to guess.

Salinity was an expensive and complex problem which would continue to grow during the following half century; it was understandable that farmers and politicians did not want to hear about it. Such attitudes were one of the strongest impediments to environmental reform. They were well to the fore in the story of soil erosion.

Like all their fathers before them the pioneers of the new farming districts cleared the land with indiscriminate zeal, spurred by the urge to render every acre productive and to leave no sanctuary for vermin such as wallabies and rabbits. Soil erosion and salt creep were the consequence.

In the late 1920s and 1930s complaints grew rife in Sydney about the heavy dust storms thrown up by the summer westerlies. The public at large came to realise that much of the New South Wales wheatbelt's topsoil was being steadily blown out across the Tasman. In 1933 a government committee was set up to monitor the problem, and in 1938 a soil conservation service was created to survey its extent" (Bolton, 1981).

The global picture.

In 1974 the author addressed extension officers as follows:

Despite numerous warnings over the years, man has recently been somewhat bewildered by the fact that Nature has slapped him in the face for insulting her ecosystem. (One of the best examples of this is at Childers in Queensland, where a whole community of 70 families were forced to abandon their eroded land after less than a century of cane farming.)

Nature has answered back and Man has stumbled into an ecological trap. Civilisations have been living on promissory notes for generations and now they're falling due all over the world. In economists' terms, we have been living not off our interest, but off our land capital.

The writing is on the wall but ignorance, vested interest and complacency make Man go on doing what history has clearly shown him to be wrong. Nature has sent us a final notice — payment is due, and we now need to decide how we shall pay, not whether we shall pay.

So we find that today the status of the ecological problem is not determined by its age or academic merit, but simply by its urgency. (Roberts, 1974).

The time factor has become a crucial element in our efforts to control land degradation. If we do not get on top of the problem soon, we shall have little hope of winning the battle against erosion in several regions. Under the circumstances, perhaps the local politician who suggested in 1983 that the Declaration of a State of Emergency was not as absurd as some thought at the time. As Jacks and Whyte (1939) pointed out when referring to the Australian situation "... the only way to combat erosion is to work faster than it does, and this becomes increasingly difficult as time goes on."

Osborne and Rose (1981) have demonstrated the general rate of land deterioration by comparing earlier estimates with the latest erosion surveys. In 1946 Holmes estimated that Australia has 18.8 million hectares of water eroded land, requiring erosion works valued at $24.5. million. By 1975 the national erosion survey (Anon, 1978) reflected an area of 57.7 million hectares requiring $41.5 million for control works.

The attitude towards land and Nature was publicised earlier this century by Gifford Pinchot in his book *The Fight for Conservation* (1947): "The conservation idea covers a wider range than the field of natural resources alone. Conservation means the greatest good to the greatest number for the longest time."

A promising and interesting approach is that suggested by Leopold when he writes:

"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts... The land ethic simply enlarges the boundaries of the community to include soils, water, plants, and animals, or collectively, the land."

I cannot avoid the compelling similarity between the practicing environmentalist and the personality traits held up for us by the great religions of the world. Indeed, the similarity deserves our closest attention (Roberts, 1974). I shall return to this aspect of our land relationships.

Size of the land degradation problem in Australia

The significance of soil loss, and the need for a change in our attitudes towards the land is reflected in the findings of the national erosion survey (Anon, 1978): "Fifty-one per cent of the total area used for agricultural and pastoral purposes in Australia was assessed as needing some form of soil conservation treatment under existing land use. The total value of fixed investment in this area subject to degradation is of the order of $12 billion (at 1974 prices)."

Recognising the essential need for changing attitudes towards the land, as the basis for combatting the land degradation problem, the 3rd National Soil Conservation Conference (Anon, 1981) unanimously resolved: "This Conference should warn that unless there is greater awareness of, and remedial action against, this problem and that unless more funds and effort are applied to conservation of soil, it is inevitable that the production level and stability of essential primary products will diminish."

Osborne and Rose (1981) quote Kovda's (1977) estimates of Man having destroyed 430 million hectares of crop and grazing land since agriculture emerged 7, 500 years ago. They point out that on a per capita basis, Australians have destroyed 11.2 hectares, compared to 3.5 hectares in the U.S.A. since settlement.

There is a contradiction between the landholders 'love for the land' and the degradation caused to this land. The classic writer of Australian rural tales, Steele Rudd (Davis, 1934) wrote in sentimental tones of the deep joy the new selector felt for his own block: "You'll ride all over it filled with a proud spirit of ownership ... even the wild flowers and darn stones'll be yours! How you'll admire it all."

It is the very same corner of Australia about which Rudd waxed so lyrical, that some of the worst erosion in the country is now occurring. This area, between Toowoomba and Warwick, has been the subject of a special study. It combines very small holdings with steep cultivations and intensive storms'— a predictably disastrous combination of circumstances where studies relating soil loss to grain yields has been well used to bring home the concept of the permanent cost of grain production.

With an estimated rate of natural soil formation of 10-15 tonnes per hectare per annum, and an estimated annual loss of 100-300 tonnes per hectare in several northern regions of Australia, the estimated productive life of much of our sloping cropland is less than 30 years at present loss rates. On the Darling Downs approximately 10,000 hectares of some of the country's very best cropland has already been lost forever. This has occurred within 80 years after settlement. Surely this should be of vital concern to everyone who eats and votes.

Man, land and values

We have a long record of clearing land and of apparently making the assumption that the resulting cultivated soil will support permanent cropping. In some States, notably Queensland where 80,000 hectares is cleared annually, very little use is made of existing land capability survey data or of existing legislation, to ensure a sound basis for clearing. Booysen (1980) has stated the plain facts of this crucial matter, as it affects the South African situation: "The modification of vegetation (clearing) must only be undertaken when knowledge is sufficient to ensure a management inputs capable of maintaining a stable and permanent cover and topsoil. Anything less than this will be disastrous."

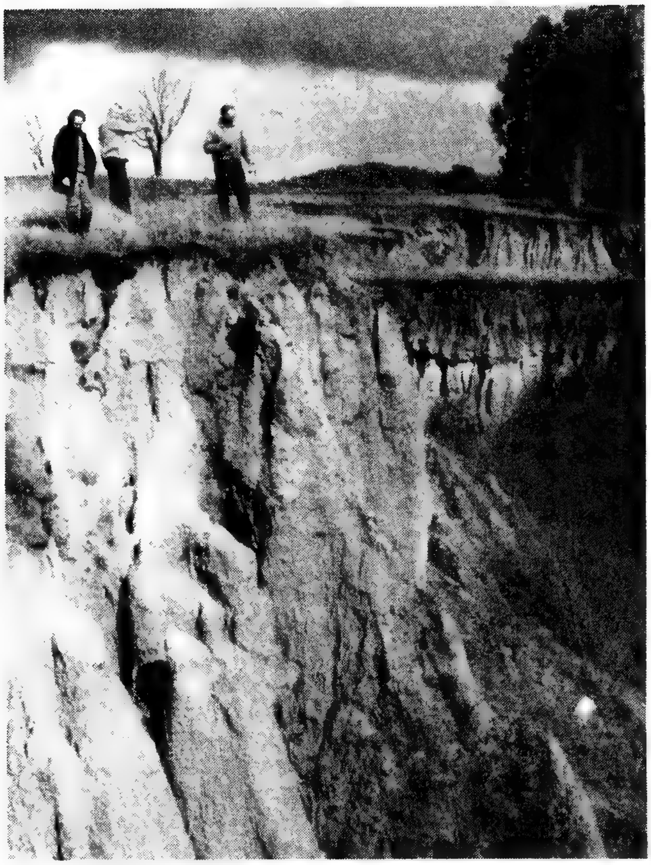
Indeed, it has been asked whether the Brigalow of the 1960s will go the way of the Mallee of the 1930s. This possibility is certainly strengthened by the extent to which Class 2 Land prices are being paid for Class 4 Land in Queensland's marginal regions. Let's hope we don't re-live the rural misery so tellingly portrayed by Steinbeck in his *Grapes of Wrath.*

There is increasing recognition that natural objects may warrant acceptance of their rights and worth beyond their direct usefulness to Man. Test cases in America have made legal history as a result of barristers defending the rights of trees against the rights of Men to have them removed. The world-wide support for whales, harp seals and rainforests has ushered in a new era in the Man/Nature relationship. John Passmore (1974) suggests that our new morality has moved not so much towards more rights for non-humans, but rather to a reductioon in the acceptance level of man's arrogance towards the land and its creatures.

Several of the great religions of the world have recognised and taught the need for a humility and co-existence of Man with the physical world and its creatures (= that which is created).

The well-known writings of visionaries like Erlich, Commoner, Meads, Ward have emphasised the futility of Man imagining that he need not adapt to the laws of Nature, but that he assumes that his technology will ensure his survival irrespective of the extent to which he flouts Nature's laws. As Francis Bacon suggested: "To command Nature, we must obey her."

We have allowed the landholder to ruin much of our available soil on over half of the area of productive land, while we make it increasingly difficult for miners to produce enormous wealth for us on less than 1% of our land area.



Gully erosion in north-eastern Victoria.

Land condition as an issue

It has repeatedly been pointed out by protagonists of soil conservation (Roberts, 1984), that erosion is not recognised as an environmental issue of any significance. In an unusual survey of newspaper coverage of issues, Sinden (1980) analysed the space given to environmental subjects in Australian newspapers over a full year. In that year (1978) 1150 environmental articles (averaging 3.9 per day) were published but neither land degradation nor soil erosion rate a mention in the listing of issues or their ranking.

While the tragedy of starvation in Ethiopia appears to have little in common with the erosion problems in Australia, it is pertinent to note that both situations have in common the fact that they have been deteriorating for years and have been reported on in detail with pleas for action. In both cases the authorities have apparently regarded the problem as someone else's responsibility. Let us hope that both do not require the authorities to be embarrassed into action by the media.

Is soil is so vital, why has soil conservation not had more attention?

Personally I believe that four main factors have contributed to erosion being a non-event amongst environmental activists. Firstly, it is seen as a natural process that is not really man made and has always been with us. Secondly, because it is so widespread it very seldom arises as a major local issue sufficient to stir any one local group into action. Thirdly, soil as such has no appeal as a rare or beautiful resource when compared with say wildlife, the Barrier Reef, rainforests or sand islands.

Who will speak for the land, if those who depend on it, do not speak?

Fourthly, and perhaps most significantly, soil erosion is associated with the little man, the battler, the man on the land struggling for a living against the elements.

We have allowed the landholder to ruin much of our available soil on over half of the area of productive land, while we make it increasingly difficult for miners to produce enormous wealth for us on less than 1% of our land area (Roberts, 1982).

In an article headed "The biggest job of all for conservationists" Graham (1976) writes, "State Conservation Departments and their soil and water divisions, severely limited as they are, have been unable to stir up public and political awareness of the danger (of erosion). Could not the Australian Conservation Foundation (A.C.F.), the champion of other environmental causes, take up this one, undertaking the monumental task of convincing politicians that the decision to save the soil cannot be left to the last moment."

Since that time the A.C.F. has responded with a series of meetings and publications on soil degradation and in a recent survey (1984) of A.C.F. members it was shown that conservationists now see soil erosion as Australia's highest priority environmental issue.

It is the author's view that a major deficiency still exists in the extent to which rural organisations are not accepting their share of responsibility for soil conservation. Who will speak for the land, if those who depend on it, do not speak? We need to analyse why there is no effective political lobby for soil conservation and take corrective action without delay.

Historic roots of our attitudes to land

In the 18th century, serious erosion was largely limited to the ancient farming lands of north Africa and Eurasia. During the past 200 years erosion has become widespread in the New World. The exploitation of the early European frontiersmen was perpetuated with vigour by the new colonists who were speculative and acquisitive in their land use. Thus were the permanent family farms of Old World, replaced by temporary shifting cultivation, abandonment and ever-extended new frontiers. Ecological disaster followed the colonials in the United States, Chile, Mexico, Columbia, southern Brazil, South Africa, India and Australia.

Butzer (1974) now suggests that "Beyond this lowest common denominator of conservation guidelines there is a crying need for ecological thinking ... The success or failure of conservation methods depends on social attitudes as many as anything. The traditional values of the Eurasiatic peasantry have, by and large, preserved soil resources indefinitely ... with few if any options to find new land.

"The resulting ethic of responsibility for the state of the land and its preservation stood the Eurasiatic peasant in good stead, but unfortunately, did not cross the ocean. Farms are commonly bought and sold in New World areas of recent colonisation, and most North American farmers' overriding concern is short-time and profit. Whatever success the U.S. Soil Conservation Service has had in checking erosion can be attributed to its educational program in convincing the farmer that erosion means less cash. The U.S. farmer expects outside assistance to tackle any environmental problem, and environmental hazards have become equated with government responsibility ... As a result, conservation is not practiced independently but becomes a matter of politics at the county, state and even federal level. Erosion, once out of hand, becomes an expensive problem to check, but the responsibilities that were shirked by the offending farmer ultimately require major capital expenditures, a tax burden to be shared by the nation at large."

It is enlightening to compare these latter-day reflections on the land, with the much-quoted words of the American Indian Chief Seattle, who wrote to the President in 1854: "The earth is not the white man's brother, but his enemy, and when he has conquered it, he moves on. He treats his mother the earth, and his brother the sky, as things to be bought, plundered and sold like sheep and beads. His appetite will devour the earth and leave behind only a desert. This we know: the earth does not belong to man, man belongs to the earth."

Changing Australian attitudes

Downes (1972) in his overview of "The ecology and prevention of soil erosion" regards Australia as one of the most recently settled countries where the effects of settlement on the land are now reaching their 'peak of severity.' The whole basis of soil conservation, erosion control and reclamation is 'ecological' in Downes' view, indicating a need for a widespread understanding and appreciation of Nature and her limits.

Part of the change in sentiment relating to the Australians' relation to the land is reflected in the words of local folksongs. The bush ballads of the late 1800's sang of the challenge of settling the country and the hard times that accompanied rural life. Sentiments relating to frontier activities such as timber-getting, ringbarking and clearing have been superceded by concern for Australia's disappearing forests, e.g. John William's country western song "The trees are now gone. The frontiersman's perception of 'man against nature' must now be, and is being, replaced by a more symbiotic relationship in which Man sees himself as one dependent biota integrated into the earth's ecosystems" (Glacken, 1970). Without such a change it is difficult to see the Australian 'vision splendid' remaining so.

This realisation of Man's unfeeling arrogance toward the land has led to poets such as Judith Wright recording the poverty of spirit reflected in denuded landscapes such as her *Eroded Hills* (1963):

> These hills my father's father stripped;
> and, beggars to the winter wind,
> they crouch like shoulders naked and whipped -
> humble, abandoned, out of mind.

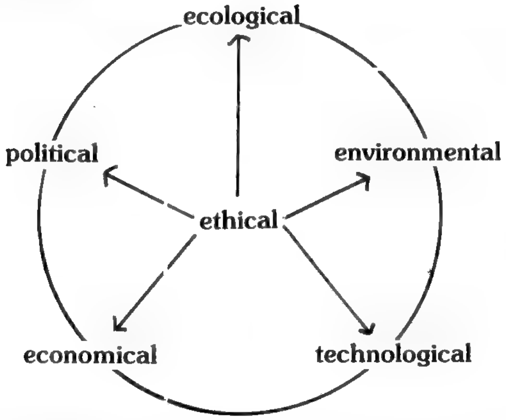
In every rural community there are those rare individuals who show unusual concern for the land and its maintenance. Graham and Valmai Burnett of "Rathburnie" in the Brisbane River Valley, Queensland, exemplify these opinion leaders. Burnett (1984) after a quarter of a century of conservation farming states with stark simplicity, "Humus is the most important natural resource on earth." Even when conscientious husbandry of the land shows real benefits in times of drought, as was clearly shown by the Burnetts in the early 1980s, general non-acceptance by the local community, of the permanent philosophy, is predictable and widespread. This unwillingness to consider the virtues of the permanent approach to the land is symptomatic of the leeway which needs to be made up before constructive land ethics can be established in Australia.

The stages of cultural and ecological evolution

Characteristic	*Primitive*	*Frontier or industrial*	*Spaceship*	*Earthmanship*
Relationship to nature	Man in nature but controlled by nature	Man vs.nature: increased control	Man vs. nature: attempt at complete control	Man and nature: Selective control
Goals	Survival	Survival, high standard of living	Survival, high standard of living	Survival, high quality of life
Method	Try to secure enough food, clothes, & shelter to stay alive	Produce, use, acquire as much as possible in one's lifetime	Complete technological and social control of nature and man to avoid exceeding the limits of the earth	Selective control based on ecological understanding, diversity, harmonious collaboration, and caring to avoid exceeding the limits of the earth.
Social units	Individual, tribe	Family, community, corporation, nation	Family, community, earth	Family, community, earth
Reward	Staying alive	Profit, efficiency, power	Survival, comfort, power	Survival, joy, a purpose to life
Population	Reproduction to survive	Reproduction determined by economic & social factors	Reproduction controlled by the state	Reproduction controlled by a balance of voluntary action and mutual coercion through laws
Environmental quality	Not always a meaningful idea	A free good to be used and abused at will	A basic concept of critical value	A basic concept of critical value

Progress from the frontier mentality to the desired earthmanship, is explained by Tyler Miller (1975) in the accompanying table.

In most of Man's developmental endeavours affecting the land, the economic, political and technical feasibility have been the prime evaluative criteria of whether projects are feasible. Caldwell (1975) suggests that if Man is to survive his own environmental disasters, then ethical considerations, should be central to decision making as shown in his feasibility circle:



Let us consider the words of Aldo Leopold:

"Conservation is a state of harmony between men and land. By land is meant all the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left.

The problem, then, is how to bring about a striving for harmony with land among a people many of whom have forgotten there is any such thing as land, among whom education and culture have become almost synonymous with landlessness. This is the problem of 'conservation education'.

When one considers the prodigious achievements of the profit motive in wrecking land, one hesitates to reject it as a vehicle for restoring land. I incline to believe we have overestimated the scope of the profit motive. Is it profitable for the individual to build a beautiful home? To give his children a higher education? No, it is seldom profitable, yet we do both. These are, in fact, ethical and aesthetic premises which underlie the economic system.

No ethical and aesthetic premise yet exists for the condition of the land these children must live in. There is as yet no social stigma in the possession of a gullied farm, a wrecked forest, or a polluted stream, provided the dividends suffice to send the youngsters to college.

What conservation education must build is an ethical underpinning for land economics and a universal curiosity to understand the land mechanism. Conservation may then follow." (Aldo Leopold, 1953).

A theology of the land

The use of moral obligations as a means of gaining co-operation in landcare has not been widely applied in Australia. In the United States the pulpits of country churches were used by the 'father of soil conservation' Hugh Bennett in the 1940s. "Big Hughie" made it very clear to his congregation that it was nothing less than our Christian duty to preserve the land and keep it fruitful. Elliot (1978) the Australian philosopher makes a crucial point when he challenges our Samaritanism towards the land:

"When we see someone being exploited, our response as Christians ought to be to mirror God's concern for the outcast and the down-trodden. In a similar way, when the earth is being exploited, our response ought to be to mirror God's concern for His Creation."

For modern Australians I suggest that three attitudes can be identified as being dangerous: (1) the blind optimism of those who believe that some scientific innovation will always save us; (2) the gloom-and-doom of those who have given up hope; and (3) the greed, apathy and refusal to face reality of those who have given up concern and involvement.

It has been noted by Cook (1970) that Man's approach to the land could form a permanent relationship, through one of three bases:

1. Ecological (McHarg, 1969).
2. Humanistic (Wilson, 1970).
3. Theological (White, 1971).

The proponents of a conservation approach to land resources have appealed to all three of these sentiments which have essentially the same goals but differ markedly in their motivating force.

Christian land ethics

What did Christianity tell people about their relations with the environment? The short answer is, "not very much", although many religious philosophers challenge this interpretation.

Especially in its Western form, Christianity is the most anthropocentric religion the world has seen. Lynn White (1971) has written at length on this matter:

"Man shares, in great measure, God's transcendence of nature. Christianity, in absolute contrast to ancient paganism and Asia's religions (except, perhaps, Zoroastrianism), not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends.

At the level of the common people this worked out in an interesting way. In antiquity every tree, every spring, every stream, every hill had its own guardian spirit. By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects.

We would seem to be headed towards conclusions unpalatable to many Christians. Since both science and technology are blessed words in our contemporary vocabulary, some may be happy at the notions, first that, viewed historically, modern science is an extrapolation of natural theology and, second, that modern technology is at least partly to be explained as an Occidental, voluntarist realization of the Christian dogma of man's transcendence of, and rightful mastery over, nature. But, as we now recognize, somewhat over a century ago science and technology — hitherto quite separate activities — joined to give mankind powers which, to judge by many of the ecological effects, are out of control. If so, Christianity bears a huge burden of guilt. The whole concept of the sacred grove is alien to Christianity and to the ethos of the West. For nearly two millenia Christian missionaries have been chopping down sacred groves, which are idolatrous because they assume spirit in nature.

What we do about ecology depends on our ideas of the man-nature relationship. More science and more technology are not going to get us out of the present ecological crisis until we find a new religion, or rethink our old one. Possibly we should ponder the greatest radical in Christian history since Christ: Saint Francis of Assisi. Francis tried to depose man from his monarchy over creation and set up a democracy of all God's creatures. He was apparently our first declared Christian nature lover. How he survived the wrath of the hierachy of his day remains a mystery.

Environment is the product of a dynamic technology and science which were originating in the Western medieval world against which Saint Francis was rebelling in so original a way. Their growth cannot be understood historically apart from distinctive attitudes towards nature which are deeply grounded in Christian dogma. The fact that most people do not think of these attitudes as Christian is irrelevant. No new set of basic values has been accepted in our society to displace those of Christianity. Hence we shall continue to have a worsening ecologic crisis until we reject the Christian axiom that nature has no reason for existence save to serve man.

The greatest spiritual revolutionary in Western history, Saint Francis, proposed what he thought was an alternative Christian view of nature and man's relation to it: he tried to substitute the idea of the equality of all creatures, including man, for the idea of man's limitless rule of creation. He failed. Both our present science and our present technology are so tinctured with orthodox Christian arrogance toward nature that no solution for our ecologic crisis can be expected from them alone. Since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not. We must rethink and refeel our nature and destiny. The profoundly religious, but heretical, sense of the primitive Franciscans for the spiritual autonomy of all parts of nature may point a direction."

Fundamental values — the key to changed attitudes

"Hegel pointed out more than a century ago that Richtigkeit, correctness, is not the same thing as Wahrheit, the truth. It is correct to define the earth by quantitative studies, but the more interesting and significant truth about it transcends measurements.

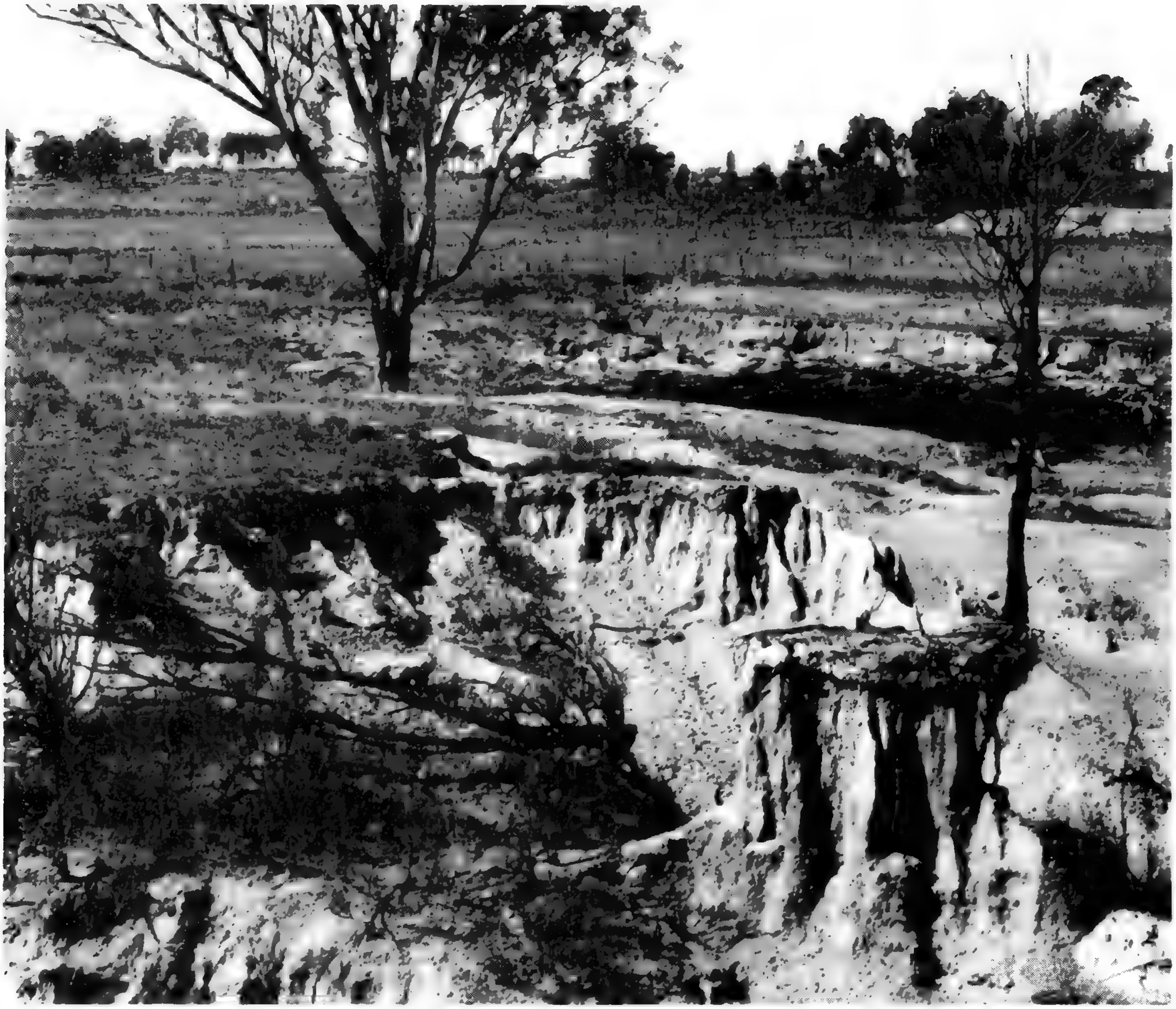
One of the least attractive aspects of technological civilization is a progressive loss in concern for the beauty of the earth. This point is of special significance to our society but in a capitalist system which seems to have no real values other than monetary values, the less tangible but more lasting, values are continuously discounted. The situation is made worse by economic guidelines which ignore timeframes of a long or permanent term.

Man is still of the earth, earthy. The earth is literally our mother, not only because we depend on her for nurture and shelter but even more because the human species has been shaped by her in the womb of evolution. Each person,furthermore, is conditioned by the stimuli he receives from nature during his own existence" (Dubos, 1973).

The British biologist Julian Huxley reformulated Origen's thought in modern terms and enlarged it to include his own concepts of psychosocial evolution:

> The human type became a microcosm which, through its capacity for self-awareness, was able to incorporate increasing amounts of the macrocosm into itself, to organize them in new and richer ways, and then with their aid to exert new and more powerful influences on the macrocosm.

Sir Julian's statement implies two different but complementary attitudes towards the earth. The fact that man incorporates part of the universe in his being provides a scientific basis for the feeling of reverence toward the earth. But the fact that he can act on the external world often makes him behave as if he were foreign to the earth and her master — an attitude which has become almost universal during the past two centuries.



The role of trees in controlling soil erosion — a small tree holds a pillar of soil. Photo DPI Queensland.

Rene Dubos has a special message for us in Australia:

The phrase "conquest of nature" is certainly one of the most objectionable and misleading expressions of Western languages. It reflects the illusion that all natural forces can be entirely controlled, and it expresses the criminal conceit that nature is to be considered primarily as a source of raw materials and energy for human purposes. This view of man's relationship to nature is philosophically untenable and destructive. A relationship to the earth based only on its use for economic enrichment is bound to result not only in its degredation but also in the devaluation of human life. This is a perversion which, if not soon corrected, will become a fatal disease of technological societies.

Placing man at the pinnacle of creation seems at first sight incompatible with orthodox ecological teachings. Professional ecologists, indeed, are prone to resent the disturbing influence of human intervention in natural systems. If properly conceived, however, anthropocentrism is an attitude very different from the crude belief that man is the only value to be considered in managing the world and that the rest of nature can be thoughtlessly sacrificed to his welfare and whims. An enlightened anthropocentrism acknowledges that, in the long run, the world's good always coincides with man's own most meaningful good. Man can manipulate nature to his best interests only if he first loves her for her own sake.

Education and attitudes

The most important contribution which ecological education can make is the development of what we may term the **Ethic of Responsibility**. Here we refer to responsibility toward our ecosystems, our fellow men and our creators. Marsh (1864) was one of the first to expound this idea and has been followed by ecological philosophers such as Passmore (1974) and Routley (1975) — writers whose thoughts deserve much more attention within the present Australian situation. Only in this way will the clash betwen private convenience and public welfare be resolved.

We might start with James Thurber's suggestion, that is: "Let us not look back in anger, nor forward in fear, but around in awareness." I would add, "not with arrogance but with humility, not as though we were the last generation to inhabit the earth, but as temporary trustees of posterity's resources" (Roberts, 1974).

Conservation is essentially a concern for the human species. Ecological action, in the long run, can only be based on compassion, respect, understanding and a willingness to share with others. Not, "The land belongs to us" but "We belong to the land". Not, "We are the conquerors of the earth" but "We are a part of the earthly system" (Roberts, 1974). It is this concept of Man's dependence on his natural ecosystems in the form of a lasting symbiosis, which forms the basis of Sampson's (1982) plea for giving land ethics a central place in agricultural education.

Ebenreck (1983) in her mini classic paper entitled "A Partnership Farmland Ethic" advances from the stewardship ethic to the concept of partners — man and land, and shows how permanent productivity can result from the practical application of "doing things together — us and the land". Ebenreck's approach is deserving of our very serious consideration as the germ of an idea which could form the cornerstone of a whole new sense of values concerning our land and our respect for it. This idea ties in closely with Ashworth's (1982) notion of recognising land as more than simply a chattle to be used: "So long as land is conceived of as property, the evolution of an ethic which circumscribes liberty to use property as we please, will be difficult." The partnership ethic recognises that the man/land relationship is a complex, two-way, ongoing process in which both partners are recognised as having different intrinsic values in which both give and take from each other. Ebenreck goes as far as suggesting we listen to what the land has to say to us in terms of meeting its requirements as a permanent partner.

This gentle custody is in stark contrast to Louis Bromfield's (1947) description of Western man as "behaving like a reckless son who has inherited too much money" (Pechey, 1980).

One of the greatest services which ecological education could render, would be the development of a clear understanding of the difference between sentiment and ethics. Sentiment is an unreliable guide; but ethics gives us benchmarks, priorities, value judgements and accepted norms. Thus the starting point for ecological education is the development of realistic attitudes towards Man's treatment of his environment, and the end point of such an education is the cultivation of ecologically sound habits towards Nature.

If we as ecologists are to successfully fill the role of horizontal specialists who form a bridge between natural and social sciences we will do well to concentrate our energies on the following four educational activities:

1. Developing an ecological conscience by re-thinking the place of Man in Nature.
2. Extending moral ethics to include a responsibility toward the environment.
3. Persuading the masses that the concept of 'human rights' extends beyond inter-group relations to the man-environment interface.
4. Examining the adequacy of the output of the ecologists to meet the growing need for their services (Roberts, 1974).

Two points need to be made here; firstly we cannot return to a past Utopia, and secondly we cannot maintain the present wasteful and unrealistic way of doing things much longer.

As Aldo Leopold said, "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." Leopold, widely acclaimed as the Father of Land Ethics, goes on to say "There is as yet no ethic dealing with man's relation to the land and to the animals and plants which grow upon it. The land relation is still strictly economic, entailing privileges but not obligations. Obligations have no meaning without conscience, and the problem we face is extension of the social conscience from people to land. No important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections and convictions. The proof that [land] conservation has not yet touched these foundations of conduct lies in the fact that philosophy and religion have not yet heard of it. In our attempt to make [land] conservation easy, we have made it trivial ... That land is a community is a basic concept of ecology, but that land is to be loved and respected is an extension of ethics" (Leopold, 1966). The basic idea of land ethics is expanded by Anderson (1983) to a practical stewardship of good land husbandry. In this way guidelines for practical action on the land grows out of a code of ethics.

We should teach that good farmers are in fact good applied ecologists, for both seek to harvest nature at a level that can be sustained by ecosystem equilibrium.

It is generally recognised that the acceptance of a comprehensive conservation programme throughout the nation requires a combination of *financial* assistance, *regulatory* guidelines and *extension*. If extension is broadened to include education from adults down to young children, a number of specific aspects of such an educational programme may be considered. The writer suggests that the following 15 Point Education Plan is worthy of implementation in Australia in answering the fundamental question, "What should we teach?":

1. We should teach that the dominating and consuming approach to our non-renewable resources is short-sighted and has caused failures of civilizations throughout history. We should proclaim the truism that a raising standard of living cannot be built on a falling level of soil fertility.

   Thus our view that Nature is there primarily for Man's use should be reconsidered to include non-monetary values.
2. We should emphasise that conservation does not necessarily imply non-use or protection for its own sake. It means maintenance of productive potential, by marrying economic and ecological realities, as in the National Conservation Strategy.
3. We should teach that good farmers are in fact good applied ecologists, for both seek to harvest nature at a level that can be sustained by ecosystem equilibrium.
4. We should teach that Man is not an independent controller of Nature, but an integral part of the global systems on which he depends. It is a lack of awareness of this interdependence that has caused the environmental problems which the world presently faces.
5. We should teach that environmental problems are complex and require national and international solutions — that our planet is a closed system where actions and reactions are of global

proportions.

6. We must bring home to coming generations the old Greek adage that what men learn from history is that men don't learn from history — that each generation seems doomed to have to learn its own lessons on ecological behaviour, unless we learn to read the signs.
7. We must avoid the despair and gloom which so easily arises from consideration of environmental problems and we must teach the optimism and challenge which is demonstrated by the successes of dedicated and perservering individuals and organisations.
8. We must teach that even in our democracy, the common good of the community takes precedence over the unfettered freedom of the individual to act irresponsibly towards the environment.
9. We must stress the need for political ethics in our system of government, together with the desirability of more vision and less expediency, more permanence and less exploitation.
10. We should emphasise the links and interdependence of landholders and city dwellers, of taxpayers and consumers, in such a way as to develop an understanding of resource conservation as an issue concerning the whole comunity.
11. We must demonstrate case studies which bring home the disasters of poor land management and the achievements of sound planning as a basis for sustained stable production.
12. We must imbue in the next generation a pride in good stewardship of the land, a lasting satisfaction from well-husbanded land. The spiritual well-being which flows from such fundamental achievement should become an integral part of our national ethos.
13. Together with a national pride in conserving non-renewable resources, should be acceptance of a land ethic which not only values our good fortune but develops an awareness of others less fortunate and how we might share our good fortune.
14. We must emphasise that as a resource-rich western nation set in the eastern arena, we have grave responsibilities which accompany our role as trustees of such natural wealth.
15. Finally, we must teach the place of Man in the grand scheme of things — that we are on this earth for but a fleeting moment in the life of our land. As such we cannot be end-users with a right to consume the potential of the land. Rather we have the privilege of using the land and leaving it in a better condition than we found it (Roberts, 1983).

I suggest that in our efforts to develop a Land Ethic in our nation's values, we be guided by John Ruskin:

"The earth is a great ential. It belongs as much to those who come after us, and we have no right by anything we do, to involve them in unnecessary penalties, or to deprive them of benefits which are theirs by right."

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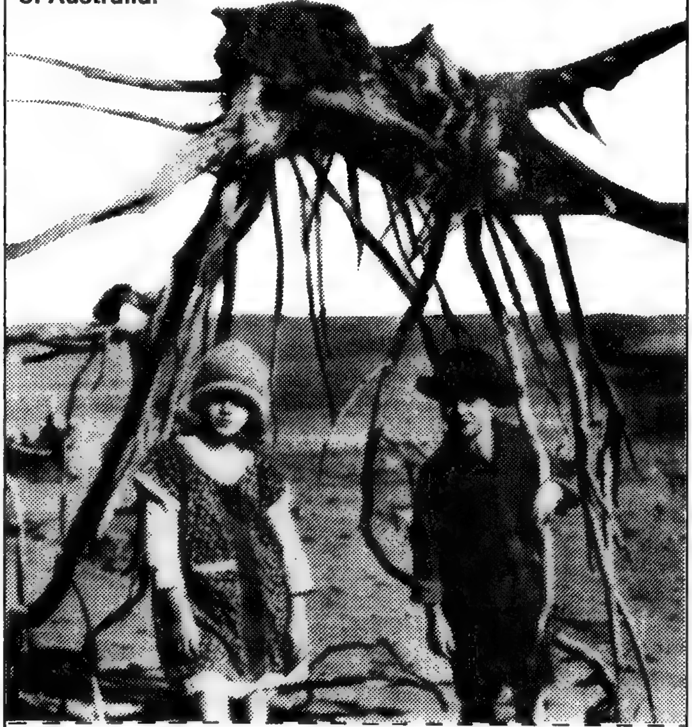

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The Soil Conservation Society of Australia

The Secretary, C/- Dr. Brian Roberts, Darling Downs Institute of Advanced Eduation, P. O. Darling Heights, Toowoomba, Qld. 4350. Membership $20.00 annually.

"The Soil Conservation Society of Australia is dedicated to encouraging the wise use of the soil and its associated land and water resources. In this way, those resources can be used indefinitely to produce our needs from private and public land without degrading the soil and the environment."

The Society, formed in October, 1985 has about 70 members. Chairman is Dr. Brian Roberts.

Our Fragile Soil

Videotape, available in VHS, Beta or U-matic format, 16 minutes. Enquiries to Darling Downs Institute Press, P.O. Box, Darling Heights, Toowoomba, Qld. 4350.

This educational videotape is produced by the Darling Downs Institute of Advanced Education in conjunction with the Toowoomba Erosion Awareness Movement. It includes case studies on location in southern Queensland and places an emphasis on the Land Ethic. A Teacher's kit is also available.

Bikeframe mount

By Peter van der Wyk

Being a recycler of bicycle components, I naturally decided to mount each of my photovoltaic panels on the rear end of a bicycle frame. It seemed the quickest and easiest way to get several solar panels mounted at different locations and at a height where they wouldn't be affected by the shade of nearby bushes and various structures.

The frame is used 'upside down' with the crankset at the top and a 1 inch diameter galvanised pipe inserted where the seat stem used to be. The 1 inch pipe can then be secured to a post or the side of a building in such a way that you will still be able to rotate the panel by turning the pipe to face sunrise or sunset, or you can simply leave it in the midday position.

I will let the two photos say more than a thousand words can. The front end of the same bicycle frame can be used for making a bicycle wheel wind generator as explained in **Earth Garden 39** and **Energy Works!**

A PEDAL LAWNMOWER

I noticed that Ray Hawthorne mentioned me in his article, **My compost muncher** (Earth Garden 48). On a number of occasions I have thought of building a pedal-powered lawn mower. The conventional motorised rotary mower principle of 'rip it off or bash it down' is not recommended for a pedal mower as we haven't got the horsepower to keep such a device constantly ripping and bashing more grass.

If you follow a tall blade of grass through the mower (not recommended as a real exercise, so just imagine it), you will find that this same blade of grass would get ripped and bashed a number of times before finally parting company from the mower.

A preferred and less energy consuming way of cutting grass is to use multi-toothed clippers by the same principle as is used to remove a fleece from the sheep's back. If you then have a low gear to propel you forward at the same time as your clippers are geared to operate quite rapidly, you can be continuously moving forward while the blades of grass fall back off the shears without getting churned up. With this principle it wouldn't make a great deal of difference whether the grass is tall or short, but it wouldn't be much good for shredding compost. I haven't thought of a way of shredding compost by pedal power as yet.

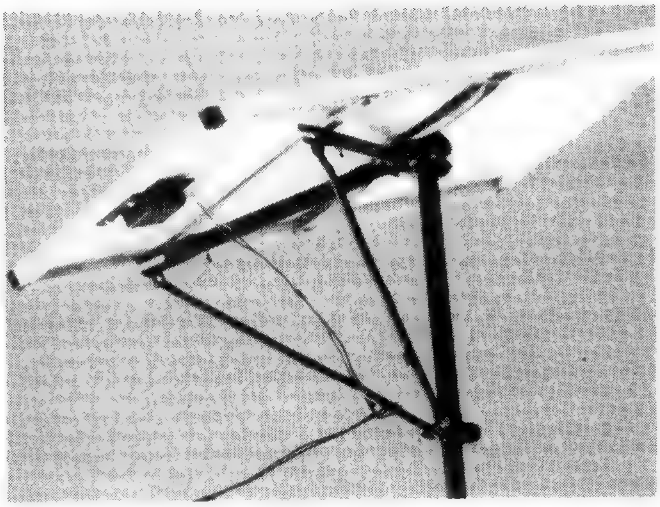
EG49 CORRECTIONS

A printing error in his article **'Low tech' TARDIS** in Earth Garden 49 (page 16) turned Peter van der Wyk into a Lilliputian living in a building only 2 feet high! The correct height of the Tardis is 24 ft.

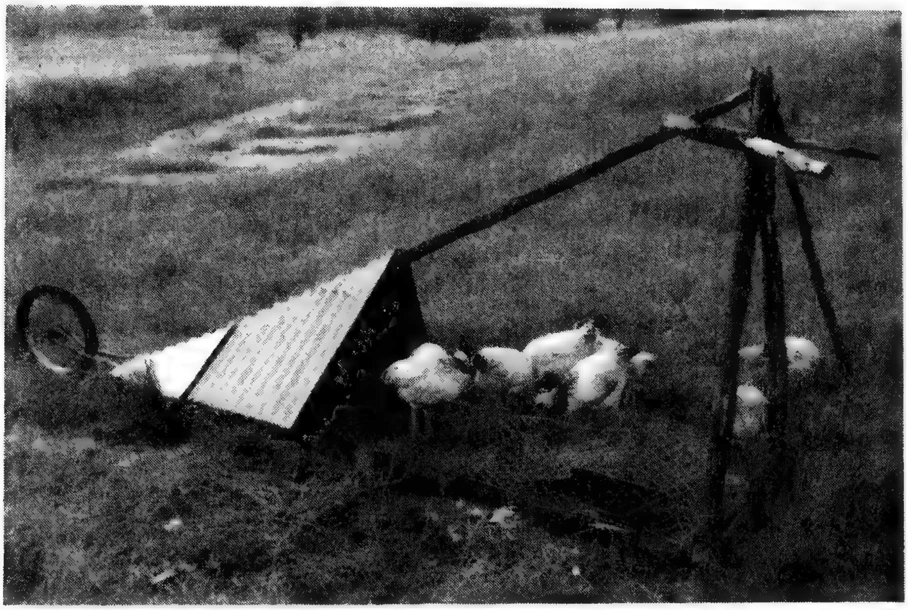
On page 17, there is a comparison between the power consumption of Peter's pocket TV and his computer. We got it right the first time (4th paragraph) at 0.065 amps, but wrong the second time (last paragraph) at 0.965 amps.

On page 18, where Peter mentioned that 6 volt photovoltaic solar panels are available, we put in an illustration of a very small 6 volt solar panel of about 0.3 amps output. "The solar panels I referred to have outputs of 2.7 and 5.4 amps," Peter comments. "Unless you have a very small battery (such as our 6 volt gel lantern battery), a panel as small as the one in the photo would not be able to keep a moderately sized battery charged because its output would not be great enough to overcome the inherent inefficiency of the battery."

Finally, in the last sentence of the second last paragraph is the statement "I am providing an amp charge to the 6V battery. "In fact," says Peter, "each of these Krypton lights provides a ½ amp charge so that two lights would provide an amp charge."



Poultry pyramids



Poultry pyramid used for growing young birds.

By Shirley Fraser

The benefits derived from free-range poultry are well known. The birds topdress your pasture with nitrogen-rich fertiliser, they provide themselves with a certain percentage of their own food, the eggs taste nicer, the young birds grow better and overall you have happier flocks as the stresses of competition with other birds can be avoided.

While we were living at Turill, near Mudgee (NSW), however, raising and running free-range poultry was a problem as foxes and birds of prey delighted in biological control of our flocks. Also, central housing never appealed to us as, particularly in a dry climate such as at Turill, the areas around these houses are quickly denuded of vegetation. They tend to smell and attract flies and all the age groups and different types of poultry live together under one or two roofs as housing is expensive to build in both time and materials.

The traditional poultry ark system therefore seemed to be the answer. But the usual structure, built with nails and wire hitches at the joints, tended to fall apart when moved daily for a year or so. They are also heavy. We remembered from our physics studies that triangles are stronger than squares, so we designed an ark based on triangles (**Figs 1a, 1b**).

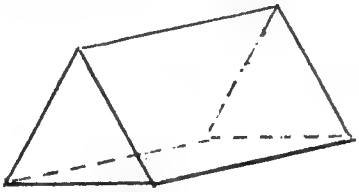


Fig 1a. The traditional ark.

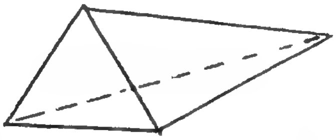


Fig 1b. The triangular ark.

Also, after our battles to remove birds from our traditional ark (have you ever tried to get inside one?), we felt that the new houses would have to be 'walk in' height. This was also necessary, as otherwise the apex became very long and low, providing little head room for the fowls.

This decided our measurements. The side and top bars were 3 metres long and the end triangle sides were 2m. We selected small cypress pine, which grows so prolifically on our property that it competes with itself in patches and grows very tall and thin. These were cut to length and put together, starting with the base triangle (after flattening adjoining areas for a good fit), nailed and then a Cobb & Co hitch was put around the whole join. This ensures that the joint cannot move apart or slip along.

The end triangle was attached to the base bar in the same way. Attaching the top bar was the trickiest bit, but we overcame it simply by fixing a small piece of plank to the top poles already joined, flattening the bottom of the end of the top bar and joining as before (**Figs 2a, 2b**).

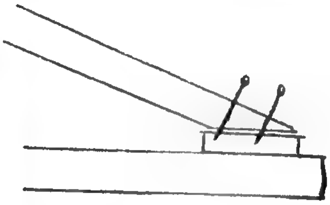


Fig 2a. Side view of ark apex.

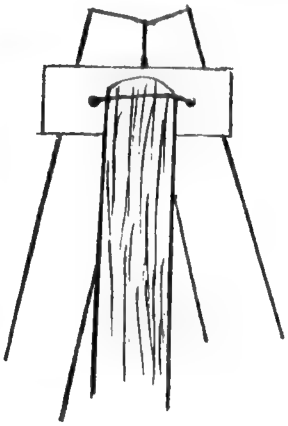


Fig 2b. Top view of ark apex.

For real convenience we added a people-sized door: put an upright bar into the pen (**Fig 3**). The door is made the same way as before to fit the opening (otherwise the foxes will outfox you again).

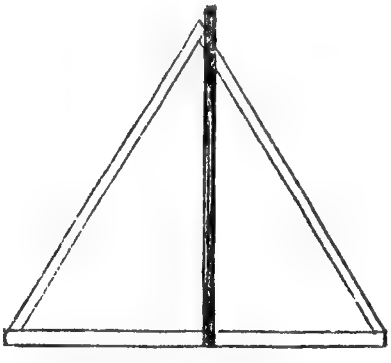


Fig 3. The door jamb.

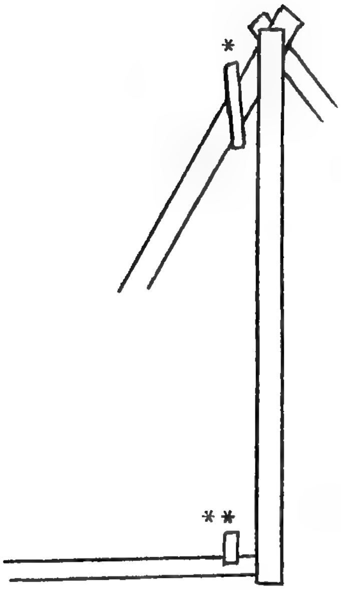


Fig 4. The hinge holes in the house.

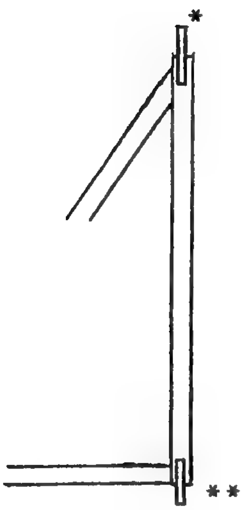


Fig 5. The hinge holes in the door.

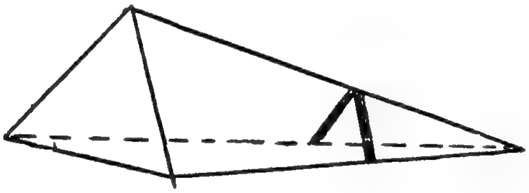


Fig 6.

A hinge can be made using short, thick pieces of fencing wire or reinforcement rod. Drill a hole large enough to accommodate the rod right through the top poultry house bar (**Fig 3***) and part way through the bottom bar (**Fig 4****). Line up the door and drill holes in the corresponding places in either end of the upright bar (Fig 5* & **).

it makes things easier at this stage to cover the door and the poultry pyramid with wire netting. Don't put netting on the floor, but for the safety of chicks and ducklings, put a row of smaller mesh around the bottom of the sides (see photo). Then stand the door on the bottom pin in the bottom bar (**Fig 4****) — a washer in between makes swinging easier — and drop the top pin through the house bar (**Fig 4***) and into the door hole (**Fig 5***).

To make a lock, drill right through both the house and door bars (with the door closed) and insert a wire or rod peg.

To add some shelter for your birds you will need some sheets of aluminium or iron (aluminium makes it much lighter). Put a bar from top to bottom rails of the poultry house for more nail purchase (**Fig 6**). The shelter can be any size you like and you can make one side open if you wish. You can also put in an end wall to stop crowding in the apex.

We have used these houses for broody hens and eggs or young ones, growing young birds and layers, adding nest boxes, feeders and water bowls as required. Stock can free-range and use the house only as sleeping quarters, or remain shut-in while the poultry pyramid is moved once or twice each day as required. These houses are great if you have to go away for a few days. The birds still get their quota of green feed while remaining safe from predators. When it began to rain in the autumn of 1983 after the long dry, our paddock was covered in green triangular patches!

Materials needed: Timber, netting, iron, nails, wire, tools.

Cost: Minimal, if you recycle and can get your own timber (treat it occasionally with old oil).

Time: Even a not-good carpenter like myself can make one in two to three days without help and it's not heavy work.

more letters

Dear Keith & Irene,

Life on our farm is going along pleasantly. We're milking both Jerseys (Tiny and Flower). Flower is in the 13th month of her first lactation. She's the heifer we raised from six day's old (see **Calf cash** in **Earth Garden 37**). A year ago she had her first calf and we had an interesting time breaking her into milking. We sold the calf two months ago and are now milking Flower once daily. She's still giving a good amount, 6 litres, which with a litre of Tiny's milk added, we're feeding to two poddies. Tiny's in her 20th month of lactation, giving 3½ litres every morning.

We raised a Jersey bull to impregnate both cows, which we hope he's now done, as we're selling him because he fights with the cows and has caused sore eyes with his big horns. We're still making wine (Steve) and cheeses (me) and trying not to expire in the north coast heat. I love the climate here in autumn, winter and early spring, but I hate the heat of summer!

Love & peace, Marja Fitzgerald, Upper Mongogarie, NSW.

Dear Friends,

I will be travelling around New South Wales and Queensland in the near future. While I'm doing so I would like to meet some **Earth Garden** people. I would also like to work on farms to gain knowledge about organic orchards, poultry raising, beekeeping, fencing and commercial herb growing.

If you own a small property or large and could do with a hand around the place in return for answering my questions on any of these subjects which you know about, please write to me and let me know. I will be travelling alone in my Kombi campervan, so I could do with the company as well. I'm a 22-year-old single male, nonsmoker, fit and healthy and eagerly awaiting any replies.

Yours faithfully, Glen Pryce, 5 Breslin Street, Gladstone, Qld, 4680.

Dear Earth Gardeners,

The letters and educational articles in each issue of **Earth Garden** are invaluable to us. Some of the skills and facts which we are learning from the magazine have already been put to good use. However, we are at the comparatively frustrating stage of our move 'onto the land'. We are still saving for the land, the building of a shelter from mud or whatever material is at hand, the establishment of roads and fences, etc.

In the meantime, we are acquiring as much knowledge as we can about every matter from food preservation, to methods of harnessing water for power, to compost toilets. Is there anyone living in the close vicinity to Newcastle who is already leading an Earth Garden lifestyle? We would love to hear from your.

Helen Tyzack and John Wood, PO Box 5312D, Newcastle West, NSW, 2302.

Burnt off!

By Sister Helen

An old jeep pulling an equally elderly water tanker drew up. Out leapt the Captain and cried, "Are we all ready?"

"Yes", came the confident reply.

The Captain looked over his Bushfire Brigade team. Two Sisters, one retired farmer, and the farmer's wife.

"Right. What are we going to burn?"

He was shown the area, some five acres, and also the cow's paddock which was **not** to be burnt. The farmer was shown how to work the fire lighter, which was so efficient that it began to light the grass around his feet while he was still talking to the others and walking towards the starting point. The flames were pointed out to him and hastily stamped out. They off he went, lighting the grass as he circled the first area. The wind blew and the fire raced away.

"Stop the fire from burning the cow's paddock!" squeaked one of the Sisters. The jeep plus trailer was slowly turned around in a large three-point turn, narrowly avoiding the ducks' yard and several large trees. The backpacks were prepared for use by the Sisters, but despised in preference to the tanker which would be so much easier.

Eventually the tanker reached its position and the hose was unravelled. There was a pause while an explanation was given on how to operate the hose. All was ready. The rope was pulled and the motor started. No water came from the hose.

"All equipment should be tested before the first match is lit", stated the farmer's wife.

"He said it worked yesterday", countered the husband.

The rejected backpacks were brought out again and quickly put into use to save the remainder of the grass in the cow's paddock.

I'll take the fire lighter and go around the next section. You guys control this side of the fire and the road will contain the other." Having given his orders, the Captain disappeared. The 'guys' took up their positions. A few seconds late the first drops of rain fell. A few more seconds and there were some more drops of rain. A few minutes, and the Captain reappeared through the smoke and rain. "What a pity we didn't start a half hour earlier", the farmer remarked.

"This would be a good time to teach you all how to use the tanker," proclaimed the indefatigable Captain. He began to point out the various taps.

"We're getting wet," complained the farmer's wife.

"You can shelter under the eaves of the house," replied the Captain obligingly. The Brigade team huddled against the brick foundations of the house while some metres away in the pouring rain the Captain continues his lesson. "These two taps are to be opened when filling the tanker from the dam, and these two are opened when using the hose on the fire. It is all quite easy and logical when you look at it."

From that distance and through the rain it was a bit hard to 'look at it'. "Well, I must be off now. We'll have another burn here one day and bring some others so they can learn to handle the equipment too." The Captain disappeared down the drive, jeep, tanker and all. The Brigade team retired to change into dry clothes and refresh themselves over afternoon tea.

Postscript: Two days later a dead tree which had caught alight and continued to burn through the rain, fell down and ignited the dry grass arond it and this fire burnt out all the area that had failed to burn because of the rain. As a result of the earlier effort, it could burn safely as it was contained by a burnt perimeter.

Sister Helen is a member of the Anglican Sisters of the Church at Dondingalong, NSW.

A READER'S STORY

By Chelmer Roots

My association with Earth Garden goes back to 1976. My sister-in-law, Marie, lent me some copies and thereafter I was 'hooked'. The first copy I actually bought was No 15, the Lytel Herball, and that is when I started to fall in love with herbs.

I was, perhaps, at one of the lowest ebbs of my life when I started reading, as I had been retired from my job as a telephone exchange supervisor because of a deterioration of my lower spine, which eventually ended in a spinal fusion.

I won't go into any grisly details, but during the months in a plaster cast, followed by a long period of partial incapacitation, I eagerly awaited my copy of Earth Garden from the newsagent. It gave me such a new slant on life that I can't see my thinking ever changing again.

Unfortunately, I am still a 'townie' by circumstances, not be choice, but I manage to survive quite well. I have bees in my backyard and also five ducks, a vegie garden and of course my herbs. I dabble in pottery when my body allows and also like a few crafts. I'm not into meditation or religion, but spend a great deal of time playing my piano and organ. I like keeping up with my classical music as well as just playing whatever comes into my head. I'm a 'young' 51.

I have been the honorary secretary of a large sporting association for 15 years, which takes up quite a lot of time. Life is what one makes of it and I always live each day as it comes. It is always a help to adopt the philosophy of waking up in the morning and looking forward to doing something, insignificant as it may seem to others

I have a couple of remedies to pass on.

THROAT GARGLE

At the onset of a sore throat, which usually leads up to a good virus attack, gargle the throat with one small grain of Condy's Crystals (about the size of a fullstop!) and ½ teaspoon of salt in a glass of warm water. Repeat if sore throat persists.

In the case of a head cold, sniff gently and then blow the nose. I haven't had a cold or 'flu since I started using this treatment (and everyone else in the place has).I was away at the weekend and started to get a sore throat, but after 'my treatment' I'm now 100%.

THRUSH CURE

A sure cure for thrush, oral or vaginal, is glycerine and borax. Unfortunately, borax now has to be purchased at the chemist by prescription in Queensland.

more letters

Dear Keith & Irene,

My wife and I have been living in the bush of the 'Upper River' of Kangaroo Valley, NSW, for two years now, in a caravan of 24' x 8' with a canvas annexe of 22' x 8', with no 'power' and no regrets. We have found hosts of things we needed to know in your **Earth Garden** magazine and we have grown to be quite fond of it and identified ourselves with the generations and ideological principles of life that seem to be shared among most EG readers and writers.

We have the chance now to buy a share in this beautiful part of the world and finally build our 'Home Sweet Home'. It's time for 'doing' now, so keep the 'learning' on the way. Please keep the good educational forum of Earth Garden People always open.

Always tuned in with Mother Nature, Oscar & Debbie Enciso, Kangaroo Valley, NSW.

Dear Keith & Irene,

I have only just read your wonderful magazine for the first time. I think it is great. I have never seen it in a newsagents before, actually the copy I bought was hidden away amongst the fishing magazines. **Earth Garden** seemed like a bloody funny name for a fishing magazine, so I picked it up, took one look at it and bought it.

I've lived in Sydney all my life but ever since I was a kid I've grown my own vegies and kept bantams. I've always loved the country and have known that I would eventually live away from the city and have a few acres to grow my own food and keep a few goats, chooks and pigs. Now I'm making the move to Palmwoods, near Nambour in Queensland, where I'm going to build a small place on a quiet corner of a friend's land.

We've got a few hundred bananas planted, but we're mostly interested in being self-sufficient. We also love fishing and can regularly get a good feed of fish and some of the tastiest mud crabs I've ever had the pleasure of eating (catching them is half the fun). I'm only 25, but I reckon now is as good a time as any to 'retire'. Not that I want to bludge, because I know I'll be working too hard to take it easy. I just don't want to work in the city so I can get ulcers and a mortgage, then wait until I'm 60 to do what I want.

Yours sincerely, Sean Gleeson, Yowie Bay, NSW.

Dear Earth Garden readers,

It's been nice having a few visitors. The EG people who camped here, I feel sure, enjoyed the peace and quiet of this lovely natural lakeside area. Some visitors were very fortunate in being present when the 'Emerald Circle' held a session. I'm sure the experience in psychic and telepathic healing was an eye opening event. Many thanks to the columns of **Earth Garden** for giving the opportunity to meet so many genuine people in the flesh and by mail.

For the information of the folk who have written to me about the purchase of land in the area; I have done my best to comply with your requests but I can only advise you about land in the Noosa-Tewantin areas.

I would be very happy if the young Victorian couple who camped here a couple of nights would return my lawn mower and tool kit when returning from the north. The reference books that they borrowed are irreplaceable and have been in the family longer than I have. If you could parcel them up and put them on Comet or similar, I will pay the freight at this end.

Please take note that I myself do not take part in the 'Emerald Circle' activities, but I will pass on all mail and enquiries.

Ron Haines, MS 1537, Lake Cooroibah Road, Tewantin, Qld, 4565.

Dear Irene & Keith,

Thanks for your efforts in maintaining the price of **Earth Garden** this year. As readers from issue No 1 we have appreciated your stance on advertising, but when all is said and done we would rather see EG go on at a reasonable cover price with advertising.

Peace & Love, John & Chris Verey, Dorrigo, NSW.

Dear Keith & Irene, Melissa,

Still enjoying your magazine although we have moved back into town for a while. Reading them is a continuous motivation to get back out there!

Some comments:

(i) We fully appreciate you going semi-commercial. As it keeps the cost of the magazine down and provided consumerism does not take over, cigarette ads, etc (I am sure it won't), the magazine will always stay first class.

(ii) Introduction of computers. As I am in the computer game, I can fully appreciate applications for them. Society will never escape them. Learn to live with them in a harmonious manner. I believe that it is a soft-to-medium technology and by proper application may help in doing away with harder and less desirable technologies.

(iii) Unfortunately, computers have one problem, GIGO (garbage in: garbage out). Your mailing label is sending us two magazines! We have passed the spare copies on to interested people for promotion.

Yours truly, Lee de Vries, Dawn, David, Mark & Melissa, Werribee, Victoria.

Dear Lee, Dawn & family — Thanks for your well considered thoughts. We've had a few technological hiccoughs and now hope to steer EG back to our old mix of practical stories, information and useful sources for self-reliance, but there's always space for anything new that we think will interest our readers — Irene & Keith.

Dear Keith & Irene,

Are there any Born Again Christian readers of **Earth Garden** who would like to form a co-operative for rural living, aiming at self-sufficiency? There is some good land available south of Adelaide if enough people are interested in working together and sharing resources.

Iris Underhill, PO Box 53, Goodwood, SA, 5034.

'Dear Keith & Irene,

I am pleased to say I have recently discovered your magazine. I am at present working in Melbourne saving my pennies for the day I can move to the bush. At the moment I am in the process of buying 18 acres at Bunninyong (near Ballarat) which has a grand total of two trees and is fenced on one side only. My intention is to develop the land along the lines of Permaculture. My first step is to borrow some equipment from a friend to survey the block, a task that might turn out to be a lot trickier than it looks. It will be a few years before I can afford to live on the block, but in the meantime I'm learning by growing vegies in the backyard in Melbourne. I also grow a few hundred native trees to plant in the Ballarat area each year.

I wonder if there are any 'earth people' in the Ballarat area? It would be good to get some first-hand ideas and talk to someone who has had experience of living with the land. Thanks for such an informative magazine, beats watching TV.

All the best, Andrew Cox, 3 Oak Street, Wendouree, Vic, 3355.

Dear Keith & Irene,

Firstly, I'd like to thank you for such an enjoyable and informative magazine.

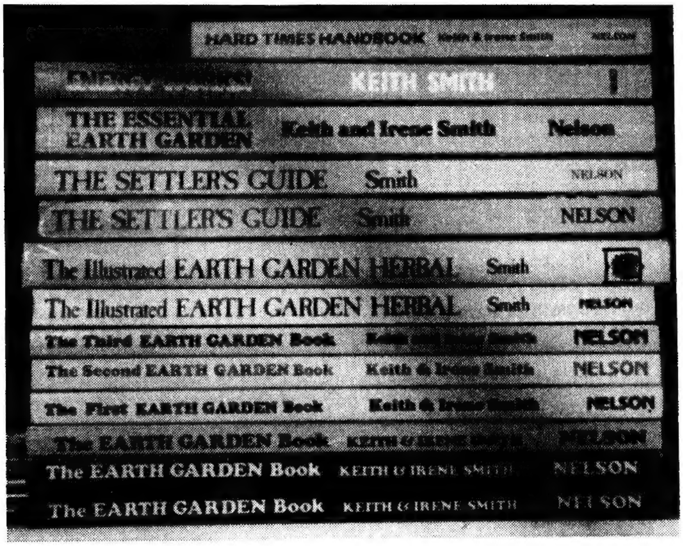
Secondly, I am seeking information on ways to obtain some rare or not commonly grown trees and shrubs. Are there any plant nurseries out there? Are there any individuals growing uncommon trees who would like to sell me some seeds or plants?

Some of the plants I am interested in include Rowan, Osier, Willow, Linden Tree, Indian Elm, Western Red Cedar, Butternut, Hickory, Wild Rice, Medlar and any other plants which are suited to a cold Tableland climate (hot summer) and which have several uses, e.g. stock fodder, woodlot, bees, windbreaks, fruit, etc.

Can anyone help?

Please write to Tricia Coulton, PO Box 426, Civic Square, ACT, 2608. All letters will be answered.

Dear Tricia — A good starting point would the The Botanic Ark Nursery, run by Steve La Valley, Cnr Sutton & Copeland Roads, Warragul, Victoria, 3820. Catalogue is 50¢ in stamps, plus a large self-addressed, stamped envelope. Next try your local Permaculture branch for advice, in your case, David Watson at PO Box 12, Bungendore, NSW, 2621. We're keen to know of good nurseries for our Access Directory listings, too — K. & I.


HARD TIMES HANDBOOK Keith & Irene Smith NELSON
KEITH SMITH
THE ESSENTIAL EARTH GARDEN Keith and Irene Smith Nelson
THE SETTLER'S GUIDE Smith NELSON
THE SETTLER'S GUIDE Smith NELSON
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A BUNCH OF BOOKS

While producing our 50 copies of Earth Garden, we've also edited and written a 'bunch of books' (the eight titles shown in the photo), all published by Thomas Nelson Australia. We enjoyed working on the books and aimed to reach people who might never have heard of our magazine.

The Earth Garden Book (later the First Earth Garden Book), a selection of the best articles from EG1-10, came out in 1975 and eventually went into four editions, becoming our best seller with 34,500 copies sold. The Second EG Book (1978) and Third EG Book (1981) also did well. These three were replaced by the bumper 500-page Essential Earth Garden of 1982, best of our first 10 years' issues, which is now, like the First and Second EG Books, completely sold out.

Third Earth Garden Book

Keith & Irene Smith

Nelson, 1981, 256 pages, illustrated. ☐ Special $9.00 posted.

"This book may change your life" was the slogan we used for the three-volume Earth Garden Books set and The Essential Earth Garden. Sadly, these books are all out of print, except for the Third Earth Garden Book, now the only way to obtain this information, apart from buying the back-copy issues (see details opposite).

The Third EG Book is selected from EG21 to EG28 which included the two big Australian Access sourcebooks (EG22-3 & EG25) and the PLACE number (EG24) with articles from New Settlers on family farms and communities scattered over a wide range of climates all around Australia. This is a collection of ingenious, human-scale methods for providing the essentials of life, full of practical and original local material.

It has an emphasis on 'how to' stories, from ancient Aboriginal methods of foraging for bush tucker to alternative sources of energy; from keeping a flock of coloured sheep, spinning, weaving and making rugs, dilly bags or baskets to building your own home from mudbricks, stone or timber. It tells you how to build fences, gates, a 15,000 gallon concrete water tank, plastic greenhouse, Coolgardie safe and a compost privy, raise freshwater fish and yabbies or grow permanent tree crops.

Around this time we became fascinated by the potential of many unusual tree crops and food plants. We turned up 16 types of nutritious legumes including sugar peas, lablab beans, pigeon peas, soybeans and chickpeas. Food plants covered include choko, pawpaw, coconut, tamarillo (tree tomato), persimmon and pine nuts. There are plenty of recipes too, of course.

For $9.00, the Third Earth Garden Book may change your life.

Peace & love,
Irene & Keith

BOOKS & ISSUES

EARTH GARDEN, PO Box 378, Epping, NSW, Australia, 2121

Prices include postage within Australia

BOOKS

ENERGY WORKS! — $19.95 .... $............
Third Earth Garden Book — $9.00 .... $............
The Settler's Guide — $15.95 .... $............
Illustrated EG Herbal — $5.50 .... $............
HARD TIMES HANDBOOK — $8.50 .... $............

MAGAZINES

Future: EG51 & EG52 — $5.50 each .... $............
1986: EG49-EG52 — $11.00 .... $............
The lot: EG1-EG52 (excludes EG13) — $90.00 (save $25.00) .... $............
Single issues: EG45-EG52 — $2.75 each .... $............
EG33-EG44 — $2.50 each .... $............
EG26-EG32 — $2.25 each .... $............
EG22-3 & EG25 (Access) — $2.50 each .... $............
EG1-EG12/EG14-EG21/EG24 — $2.00 each .... $............
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Name ....
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No need to cut this page, just send us the details in a letter if you prefer.

Back copies

EG1: Move out . . . food co-ops . . . Kibbutz and Moshav . . . Montsalvat . . . herbs . . . Fred Robinson . . . bean sprouts . . . compost and mulch . . . comfrey . . . earthworms.

EG2: Start a garden . . . Neil Douglas . . . Keyline system . . . Kiewa farms . . . drying and storing food . . . hydroponics . . . recycling garbage . . . nutrition.

EG3: Herbs . . . compost . . . fast fertiliser . . . all about goats . . . mudbricks . . . domes . . . water wheel . . . bread . . . salads . . . pottery . . . spinning . . . vegies.

EG4: The honey bee . . . back to the land in Tassie . . . the transition . . . black sheep . . . tanning . . . candles . . . bread . . . donkeys . . . a wall-hanging.

EG5: The wind — windmills . . . windpumps . . . generators . . . raku pottery . . . Cinva ram . . . poultry . . . Hamburghs . . . moon planting . . . fallout shelter . . . vegan way.

EG6: Solar 1 — sun cults . . . solar cooker . . . sundials . . . Lost World . . . Clifton Pugh . . . concrete house . . . Shalom . . . Cajun cookin' . . . horses . . . spirit of Nimbin.

EG7: Solar 2 — hot water . . . Mudbrick techniques . . . Angora goats . . . make a leather bag and belt . . . mushrooms . . . natural dyes.

EG8: Gas power — methane digester . . . by truck to Tassie . . . cumbungi hats . . . inkle loom . . . candles and tapers . . . country cottages . . . A-frame . . . school gardens . . . sourdough.

EG9: LP gas . . . Mary's place . . . building with stone rubble (slipform) . . . macrobiotics . . . oats . . . ducks . . . rug frame . . . how to kill a pig.

EG10: Granite house . . . geese . . . chip heater . . . bamboo flutes . . . build beehives . . . Jarrah shingles . . . mudbricks . . . Bio-dynamics . . . seaweed . . . tandem . . . Index (EG1-10).

EG11: Water — hydraulic ram . . . waterwheels . . . okra . . . seed primer . . . heavy horses . . . tomatoes . . . soft technology . . . wine . . . hard cheese . . . start with hens.

EG12: Keeping food — drying . . . salting . . . bottling . . . storing . . . tahu . . . tropic delights . . . plant propagation . . . plans for a solar water heater . . . solar stills and cooker . . . Moora Moora.

EG13: OUT OF PRINT.

EG14: Self-sufficiency — gardens for all . . . Botobolar vineyard . . . Terania Creek . . . millet . . . Robinson Crusoe . . . Walden . . . The Nearings . . . stone building.

EG15: A Lytel Herbal — growing and using herbs . . . text and illustrations from the classic 16th C herbals . . . modern commentary . . . Index to EG15.
EG16: A Lytel Herbal (Part 2) — comfrey, lavender, wormwood, yarrow . . . poultry shed . . . peafowl . . . goats . . . basic beekeeping . . . rammed earth building . . . hydraulic ram.

EG17: Fencing . . . dry stone walls . . . make soap . . . nets . . . pole shelter . . . breeding black sheep . . . The Autonomous House . . . asparagus . . . Aeolian harp . . . ducks . . . Khaki Campbells.

EG18: Fruit garden . . . oranges . . . lemons . . . olives . . . nuts . . . tropical fruit . . . fodder trees . . . road building . . . wood fired kiln plans . . . Cinva-ram cottage . . . sunflowers . . . homebirth.

EG19: Wood heat — pot bellies . . . Jotul . . . cooking . . . making a quid . . . build a storage cellar . . . bushfires . . . stonefruit . . . macadamia nuts . . . binding your EGs . . . tree planting . . . budding.

EG20: Apples . . . pears . . . cordon and espalier . . . build a haybale pig house . . . pollen . . . rose hips . . . mudbrick flats . . . solar homes . . . gourds . . . preserve fence posts.

EG21: Womancraft — all articles by women . . . earthly arts . . . axewomanship . . . glove puppets . . . spinning . . . weaving . . . easy rugs . . . Sumatran house . . . old roses . . . Index (EG10-20).

EG22-23: Australian Access Sourcebook . . . 150 pages . . . Aborigines . . . organic growing . . . permaculture . . . earth building . . . wind . . . solar . . . water power . . . technology . . . water supply . . . access to groups, plans, books, tools.

EG24: Place — 24 new settlers write . . . Mare Carter . . . Ron Edwards . . . Neil Douglas . . . Gundaroo Store . . . Rainbow Region . . . Mt Oak . . . Moora Moora . . . Universal Brotherhood . . . bush ashram.

EG25: Australian Access Sourcebook (Part 2) — 130 pages . . . livestock . . . aquaculture . . . fencing . . . killing . . . tanning . . . food and nutrition . . . grain grinders . . . solar homes . . . methane . . . greenhouse . . . Dorothy Hall.

EG26: The earth-built kasbahs . . . owner built homes in stone . . . timber . . . mudbricks . . . a slab cottage . . . tree felling . . . solar electrics . . . acorns . . . compost dunny . . . quandong . . . pumpkin recipes.

EG27: 100 tropical food plants for Australia (part 1) . . . 16 legumes . . . winged bean . . . pigeon pea . . . lablab . . . cowpea . . . adzuki bean . . . blacksmithing . . . bluestone building . . . wok cooking.

EG28: Tropical food plants (part 2) . . . horse and buggy . . . packhorsing the Alps . . . black sheep . . . Merinos . . . bullocks . . . tamarillo . . . stringybark baskets . . . solar trike . . . persimmons.

BACK ISSUE LIBRARY

All the back copies, from 1972 to 1986 (EG1 to EG52, except EG13). ☐ $90.00 posted. A survival kit of self-reliance, the 'big packet' (5 kg) has 3,100 pages of practical information on growing, building, energy, household economy, livestock, craft and tucker and tales from New Settlers all around Australia.

EG29: Mudbricks — the monastery at Stroud . . . Bob's bonza brickmaker . . . earth floors . . . curved walls . . . herb roof . . . cutting axe . . . low energy design . . . coconut mats . . . mangoes . . . tropical food plants (part 3).

EG30: Organic growing — compost heaps, pits, trenches, boxes, bins and barrels . . . no-dig . . . mulch carpets . . . semi-arid growing . . . preserving figs . . . tempeh . . . pasta . . . glass bottle windows.

EG31: Energy — make a hydraulic ram . . . second-hand windpump . . . mudbrick sequels . . . freezing food . . . zucchini glut . . . drying fruit . . . all about sprouts . . . hot box cooker . . . building a log house (part 1).

EG32: Year of the Tree — St Barbe Baker . . . tree tales . . . how a tree works . . . farm tree . . . native from seed . . . coppicing . . . Neil Douglas interview . . . cob building . . . log house (part 2).

EG33: Tenth anniversary issue . . . timber felling . . . lifting poles . . . post and beam design . . . log house (part 3) . . . parquet floors . . . backyard rabbits . . . goats . . . fowls . . . dry pit loo . . . portable henhouse.

EG34: China — communes . . . trees . . . fish farming . . . recycling human wastes . . . biogas . . . transport . . . travel notes . . . Chinese earth building (Ron Edwards) . . . rainforest . . . bread and jam.

EG35: Bees and trees — tribute to St Barbe Baker . . . backyard bees . . . mudbrick workshop . . . footings for earth walls . . . make a solar collector . . . magpies . . . earthworms . . . fodder trees.

EG36: Retrn to Nimbin . . . new settlers . . . a woman builder . . . pawpaw plantation . . . solar electric systems . . . potty garden . . . choughs . . . Peru . . . lavender sachet . . . biological building . . . farm structures.

EG37: HARD TIMES . . . making paper . . . newspaper fuel . . . rags to rugs . . . barter . . . slush lamps . . . sawdust stoves . . . Depression dodges . . . hand grain mills . . . 120 household hints.

EG38: Hard Times tucker . . . bread . . soups . . . yoghurt . . . no-meat meals . . . beer . . . electric grain grinders . . . Gujarati village . . . mudbrick hermitage . . . earth walls and bushfires . . . Noel's island.

EG39: Build Peter Pedal's bike wheel wind generator . . . fire without matches . . . bushfire defensive house . . . avocado growing guide . . . rosehips . . . car battery power . . . farm energy . . . backyard food.

EG40: Communities . . . running a food co-op . . . three in a caravan . . . Scott Nearing's a good life . . . cyder in Tasmania . . . our self-built house . . . earth floors . . . the billy . . . olive oil . . . hares . . . cashew nuts.

EG41: Sahara . . . Timbuktu . . . Uganda . . . pack donkeys . . . horse float journey . . . mat-tents . . . build a S-rotor wind generator . . . damper . . . yeastless bread . . . food co-op accounts . . . real potatoes. . . Index, EG31-40.

EG42: Earth covered homes . . . Burra dugouts . . . slipform stone . . . the flood-defensive house . . . tomato tips . . . deep ecology . . . build a pigsty . . . EG reader survey . . . the Tuareg . . . Jean Pain's methods.

EG43: Earth domes and vaults . . . rendering earth walls . . . quarry bush stone . . . bush shower . . . Peter Pedals' incinerator hot water and Pelton wheel . . . low voltage wiring . . . sheep . . . donkeys . . . horses.

EG44: Plug in the sun — solar electric systems . . . 12V to 240V . . . batteries . . . inverters . . . alternative washdays . . . how to make a pedal drier and 12V computers . . . solar panel booster . . . Solar Trek.

EG45: Waterworks — shifting water with sun, wind and water . . . solar electric pumps . . . gravity feed . . . hydraulic ram . . . Platapump . . . the cyclone-defensive house . . . bunya nuts . . . 12 V problems.

EG46: Windworks — wind generators . . . solar trackers . . . water turbines . . . 12 V bilge pump . . . herbal shampoo . . . compost loos . . . Tanzania . . . the algae pond . . . 12 V lights . . . Krypton lamps.

EG47: Practical projects . . . hanging a door . . . household plumbing . . . waterwheel pump . . . cycling Mongolia . . . the sun-pump . . . livestock . . . Aussie yurt . . . pigeon pea . . . bee tools . . . Peter's pedal machine.

EG48: Bob Rich's rammed earth primer . . . 1930s Dab, Pug and Pise, compost muncher . . . sushi and sashimi . . . Energy Pulse . . . buying an energy system . . . animal shelters . . . hand dug wells . . . ferrocement tank . . . growing firewood.

In our last issue

EG49: Chlorella culture . . . Solar Pack . . . Peter Pedals' TARDIS . . . just 6 volts . . . Poll Herefords . . . Babaco . . . Genteel frugality . . . Evening Primrose . . . home-made ladders . . . ferrocement roofs . . . building blues . . . immersion heaters . . . HARD TIMES hints . . . Soper with Chaucer.

$1